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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

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CONTENTS

COVER: Boy Scouts at their National Jamboree at Colorado Springs during the latter part of July 1960 preparing yard-long Maine sardine sandwiches. Almost 60,000 Boy Scouts at the Jamboree ate 60,000 cans of Maine sardines donated by the Maine Sardine Council. (See p. 23 of this issue.)

Contents Continued page II.

CONTENTS (CONTINUED)

CONTENTS (CONTINUED)

QUALITY IS BECOMING BYWORD OF FISHING INDUSTRY

"Enforcement of high quality standards is becoming the byword of the fishing industry," Assistant Secretary of the Interior Ross Leffler told the wives of fishery executives on May 3, 1960, at the fifteenth annual convention of the National Fisheries Institute, Miami Beach.

He explained that quality standards are now in effect for fish sticks, raw breaded shrimp, haddock and cod fillets, halibut steaks, and that standards are now being developed for 11 additional fish and shellfish products.

"What does this mean?" he asked. "It means that the homemaker will be protected when she plunks down her money for fish--that she can be assured of a high-quality product for her table."

In answering "How good is fish as a food and why," he reminded his audience that fish and shellfish are not only excellent sources of high-grade animal protein, minerals, and vitamins, but these products are generally easily digested and most are low in calories. All these qualities make these products ideal for serving children and old people, and for including in reducing and other special diets.

Leffler also reminded his audience of the announcement made in October 1959 of the important "nutritional breakthrough" in which it was demonstrated conclusively that oils found in fish and shellfish were cholesterol depressants. Cholesterol, of course, is the number one suspect in heart disease and hardening of the arteries. The depressant action of fish and shellfish oils is significantly greater than it is for the fatty acids from corn oil and other fats.

"Further research must be carried on," he explained. "But if such research is completed successfully, it may be possible to produce and market a fish-oil fatty acid for use as a means of adjusting cholesterol levels in the blood with a minimum of caloric intake."

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pp. 4 and 6--R. C. Wilson; p. 28--Hal & Margaret Nielson, New Bedford, Mass.; p. 44--Paul Elliott.

COMMERCIAL FISHERIES REVIEW

September 1960 Washington 25, D.C. Vol.22, No.9

LOBSTER EXPLORATIONS ON CONTINENTAL SHELF AND SLOPE OFF NORTHEAST COAST OF THE UNITED STATES

By Ernest D. McRae, Jr.*

SUMMARY

Commercial quantities of American lobsters (Homarus americanus) were found in deep water as a result of explorations conducted by the U. S. Bureau of Commercial Fisheries on the continental shelf and slope off the northeastern portion of the United States in depths of 50 to 600 fathoms. Two areas were defined by the Bureau's exploratory research vessel Delaware in which sufficient numbers of lobsters were taken to indicate the feasibility of commercial-scale exploitation. Standard commercial trawling gear was used at all of the 211 stations covered in the investigation.

BACKGROUND

Experimental trawling on the continental shelf and along portions of the continental slope of the northeastern coast of the United States by government vessels dates back to the early 1800's. Records of lobsters taken from depths and regions other than those fished by commercial lobstermen are found among the data of these early explorations. In addition, information from the research of the Woods Hole Oceanographic Institution has contributed substantially to the store of knowledge available concerning those waters and the lobster resource (Schroeder 1955 and 1959).

Taking of deep-water lobsters incidental to groundfish trawling became increasingly commonplace, and, by 1947, approximately 85,000 pounds of lobsters were taken by trawlers in offshore waters between Barnegat Lightship and Winter Quarter Lightship alone (June and Reintjes 1957). Since 1947, a small Atlantic Coast fishery, specifically for deep-water lobsters, has slowly developed. Small and medium trawlers have utilized the lobster resource largely as an interim fishery in the summer months. Fishing efforts have been limited, for the most part, to depths of 65 to 70 fathoms in areas south of Cape Cod and in the vicinity of Hudson Canyon.

Late in 1954, a program of deep-water exploratory trawling along the edge of the continental shelf off the North and Middle Atlantic States was planned by the U. S. Bureau of Commercial Fisheries. Purpose of the exploratory program was to determine the extent of potential trawling grounds in depths exceeding those normally fished by commercial trawlers. The studies were originated as part of the Bureau's continuing effort to explore and develop the latent potentialities of offshore marine fishery resources and to encourage their utilization by the commercial fishing industry. Work was initiated on the program early in 1955 with the first cruise of the year of the Bureau's exploratory research vessel Delaware (Delaware Cruise No. 1-55, January 5-13, 1955). During this and the three cruises following, areas lying along the eastern and southern edges of Georges Bank were investigated (fig. 1). Included in the data resulting from the four cruises were indications of a potential commercial lobster resource in the deep waters explored.

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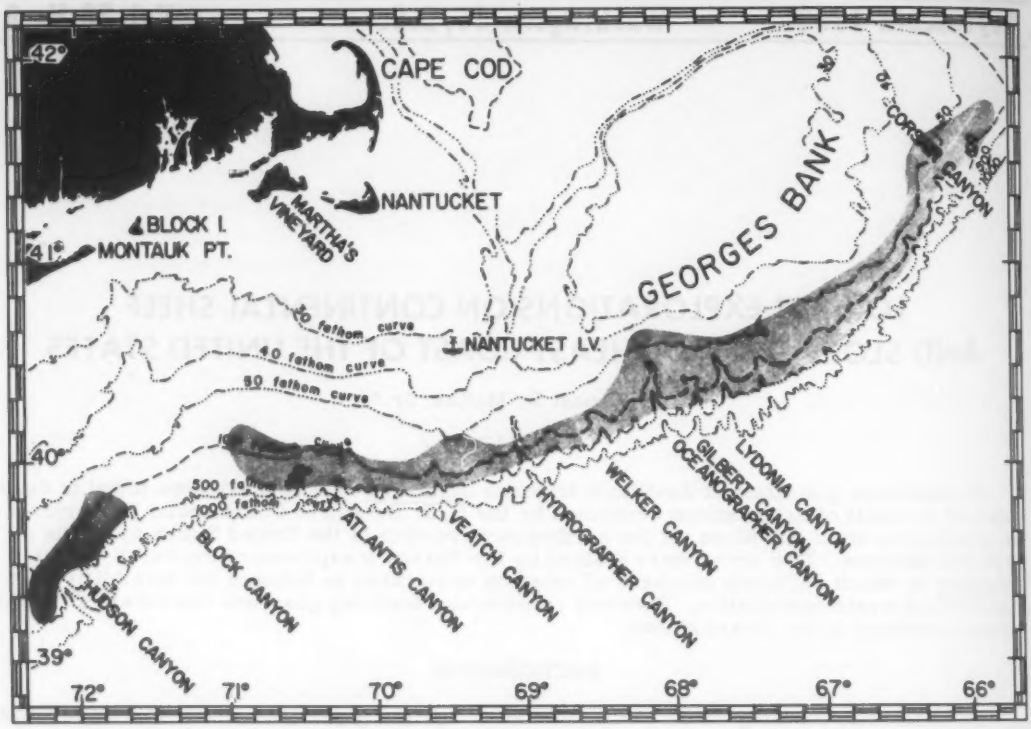


Fig. 1 - Region covered by deep-water exploratory operations of the exploratory research vessel Delaware, 1955-56.

OPERATIONAL PROGRAM

The favorable results of the 1955 cruises indicated that, with further exploration and with the development of modern methods of keeping lobsters alive and of shipboard vacuum-packing and freezing of lobster tails, the existing small fishery for deep-water lobsters could be expanded to the point where it would become a larger specialized segment of the domestic fishing industry. The Bureau, therefore, planned a follow-up program to investigate more thoroughly the deep-water lobster resource. Included in the program were exploratory, technological, biological, and marketing studies. Four lobster cruises were scheduled for the Delaware for 1956. These were designed to: (1) complement the lobster data obtained during the preceding explorations by providing more detailed coverage of the areas where the best lobster catches had been made; (2) supplement previous explorations by extending the investigation farther south; (3) tag lobsters to determine, if possible, the relationship of the deep-water population to other lobster populations; and (4) investigate methods of handling and preserving lobsters and lobster meat aboard ship and ashore.

By October 1956, with the completion of the last scheduled lobster cruise for that year, the accomplishments of the over-all program included the following: (1) the lobster population along some 300 miles of the continental slope had been sampled and two areas showing definite promise of potential commercial concentrations of lobsters had been found; (2) a total of 2,406 live lobsters in good condition and suitable for tagging had been tagged in cooperation with the Marine Fisheries Department of the Commonwealth of Massachusetts and released in the area of capture, and a few tagged lobsters had been retaken; (3) an additional 526 lobsters, chiefly females with eggs, had been kept alive in tanks of circulating sea-water

and turned over to the marine fisheries departments of the states of Massachusetts and Rhode Island for tagging and release in selected inshore areas; and (4) studies of techniques for handling fresh, frozen, and, cooked lobster meat aboard ship and inshore installations had been made, and freezer-storage and taste-panel tests for the evaluation of the palatability of lobster meat after extended storage had been conducted by the Bureau's technological laboratories (Peters and Slavin, 1956, 1958; Pottinger 1950; Slavin and Peters 1956, 1958). In addition, tests to determine consumer acceptance of the meat of lobsters from deep water were completed in some of the New England area's leading restaurants and dining rooms.

Fig. 2 - M/V Delaware, exploratory research vessel of the Bureau's Exploratory Fishing and Gear Research Base, Gloucester, Mass.

EXPLORATORY VESSEL, GEAR, AND EQUIPMENT

The M/V Delaware is a conventional side-rigged North Atlantic otter trawler of steel construction with modifications for research work (fig. 2). The vessel's over-all length is 147.5 feet, its beam is 25 feet, its draft 14 feet 8 inches, and its displacement weight 518 tons. It has a cruising range of 8,000 nautical miles. There are accommodations available for 23 men, although the normal complement during exploratory fishing consists of 13 officers and crew members plus from 1 to 3 specialists.

Standard No. 41 nets (Knake 1956, 1958) were used during the lobster operations with bracket-hung trawl doors measuring 4 feet 6 inches by 10 feet 6 inches. Extra shoes were added, increasing the weight of each door to 1,440 pounds, to enable them to tend bottom more effectively during deep-water drags. Both round and trawl-plane floats of cast aluminum alloy were used on the headrope; and, during all but 25 of the 211 drags, 45 feet of 16- to 18-inch rollers were rigged on the footrope.

In exploratory fishing, more gear damage is normally expected than in regular commercial fishing owing to general unfamiliarity with bottom topography and the location of snags and obstructions in the areas fished during exploratory operations. Gear damage during the present lobster explorations, however, was light and no greater than would be expected from a comparable amount of commercial fishing on known grounds. No damage was incurred during 189 of the 211 drags, 23 of which were made with chain gear rather than roller gear. Roller gear was used routinely during the explorations because, although chain gear may possibly fish more effectively than roller gear for some fish and shellfish, there is a greater possibility of damaging or losing the chain-rigged net.

EXPLORATORY COVERAGE

The 1955 explorations were conducted in an area along the outer edge of Georges Bank, between 41°45' N. lat., 65°53' W. long., and 39°55' N. lat., 69°53' W. long. The 1956 explorations supplemented those of 1955 in areas requiring more complete coverage, expanded the explorations in the vicinity of Veatch and Lydonia Canyons, and extended the range of the explorations westward as far as 72°17' W. long. (at 39°14' N. lat.). The areas are shown in figure 1.

Trawling in 1955 was conducted in depths ranging from 50 to 420 fathoms and in 1956 from 62 to 600 fathoms, with the majority of the drags in depths ranging from 100 to 300 fathoms. The combined areas trawled during the investigation aggregated approximately 350 miles long and from 5 to 15 miles wide on the edge of the continental shelf and slope between Northeast Peak on Georges Bank and the southern side of Hudson Canyon. Coverage, except in an area approximately 15 to 20 miles long near Block Canyon, was reasonably complete (fig. 1).[1/]

1/ In December 1958, five drags were made to spot check the areas from which the best catches of lobsters had been taken during the 1956 explorations. One of these drags was made west of Lydonia Canyon, and the other four were made near Veatch Canyon. Catches resulting were similar to those made earlier in the same areas.

Fig. 3 - Deep-water lobster catch taken during lobster explorations and typical of catches made in productive areas.

FISHING RESULTS

Best fishing during the 1955-56 explorations was experienced in two areas on the southern edge of Georges Bank: The area between Veatch and Hydrographer Canyons; and an area lying immediately east of Lydonia Canyon (fig. 1).

The first of these areas, between Veatch and Hydrographer Canyons, covers a linear distance of approximately 15 miles between 69°12' W. long., and 69°32' W. long. Fishing rates are shown in figure 4. Best fishing was found between 150 and 250 fathoms. The best single drag in this area resulted in 860 pounds of lobsters (215 individuals) in 100 minutes of fishing time.

The second area, lying immediately east of Lydonia Canyon, extends for a distance of approximately 53 miles between 66°30' W. long., and 67°40' W. long. Fishing rates in this, the largest and most productive ground fished, are depicted in figure 5. Although several good catches were obtained in both deeper and shallower waters adjacent to the area of greatest production, best fishing was again found between 150 and 250 fathoms. The best drag in this area resulted in an estimated 1,240 pounds of lobsters (177 individuals) in 95 minutes fishing time.

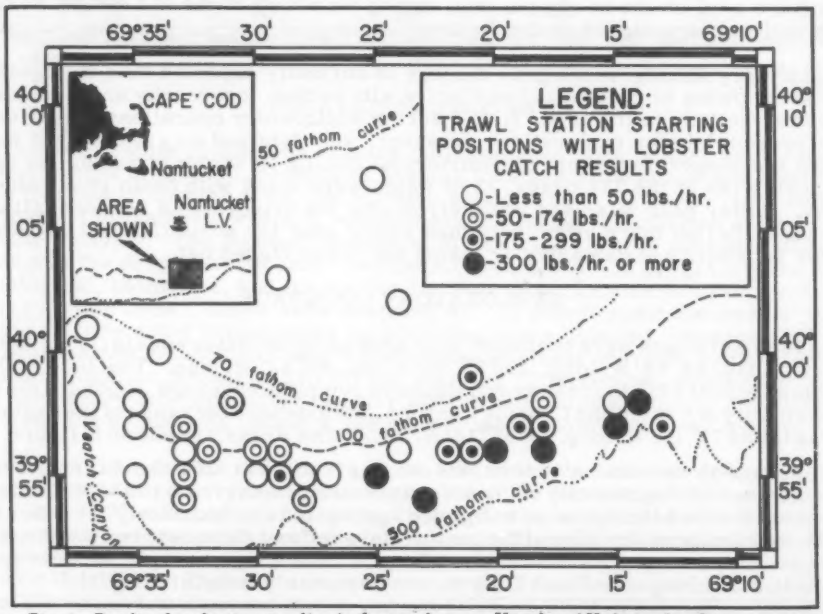


Fig. 4 - Results of exploratory trawling in the area between Veatch and Hydrographer Canyons--one of the most productive areas fished.

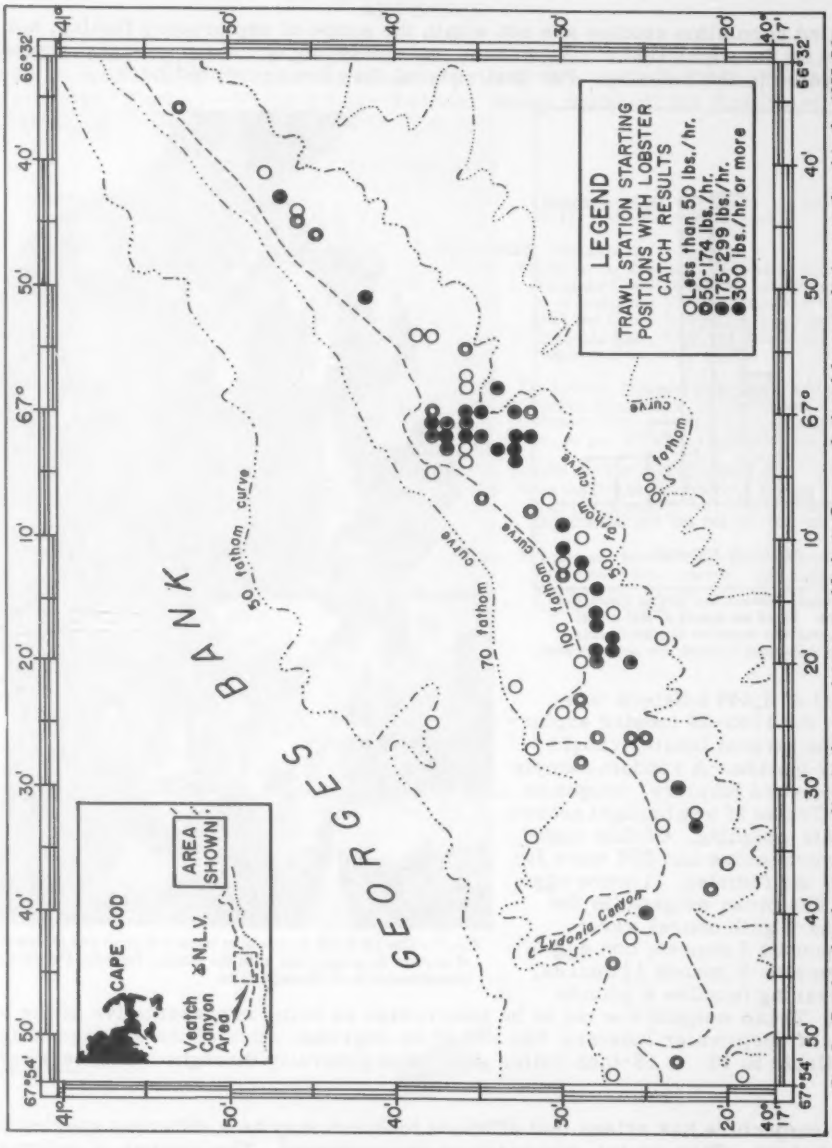


Fig. 5 - Results of exploratory trawling in the area lying east of Lydonia Canyon, the best lobster-producing area found in the 1955-56 explorations.

Throughout the 1955-56 explorations, the 150- to 250-fathom depths were the most productive (fig. 6). In most cases, catch rates decreased on either side of those depths.

NATURE OF DEEP-WATER POPULATION

Detailed population studies are not within the scope of exploratory fishing, but a few observations on the population are vital to an understanding of the commercial resource and its potential value to the industry. For that reason, they are presented here.

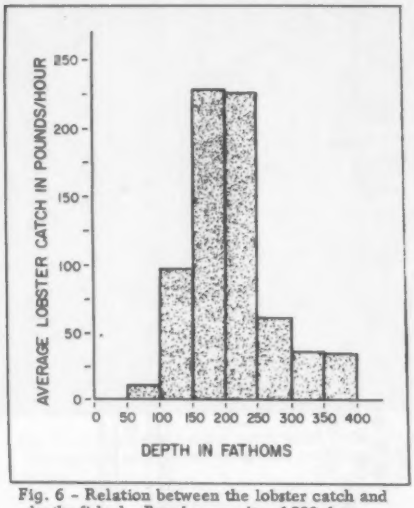


Fig. 6 - Relation between the lobster catch and depths fished. Based on results of 200 drags. Depth indicated was recorded at start of drag. Within-drag variations in depth are not indicated.

Fig. 7 - One of 2,406 deep-water lobsters tagged and released in the area of capture in cooperation with the Marine Fisheries Department of the Commonwealth of Massachusetts.

A total of 5,445 lobsters was counted in the 1955-56 lobster explorations. The largest lobster caught weighed 27 pounds. A random sample of 381 "2-clawed lobsters" caught on Delaware Cruise 16 was brought ashore for accurate weighing. Of this number, 111 were males and 270 were females. Of the females, 71 were egg-bearing. The mean weights (to the nearest one-eighth ounce) were: Males, 5 pounds 7 ounces; non egg-bearing females 5 pounds $1\frac{1}{2}$ ounces; and egg-bearing females 6 pounds $1\frac{1}{8}$ ounces. These weights are not to be interpreted as being representative of the average population of deep-water lobsters, but rather as representative of the average weight of lobsters available to 16- to 18-inch roller gear used generally throughout the Delaware investigation.

Some conjecture has arisen that offshore lobsters may be a different species from the inshore lobsters. This, as yet, has not been demonstrated. The number of returns from the tagged deep-water lobsters has been limited, and no positive conclusions can be drawn. In general, the results indicate only that the tagged lobsters tend to remain near areas where they were originally caught, tagged and released.

The deep-water population is probably unique in one way; it may possibly be one of the few natural American lobster populations that has not been subjected to heavy modification by man.

APPENDIX

A detailed fishing log, showing geographic position, depth, date, catch, and related data for each drag is available as an appendix to the reprint of this article. Write for Separate No. 598, which includes "Table 1--Fishing Log--Lobster Drags made off the Northeast Coast of the United States, M/V Delaware, 1955-56."

LITERATURE CITED

JUNE, FRED C. and REINTJES, JOHN W.
1957. Survey of the Ocean Fisheries off Delaware Bay. U. S. Bureau of Commercial Fisheries, Washington, D. C., Special Scientific Report: Fisheries No. 222 (August), p. 26.

KNAKE, BORIS O.
1956. Assembly Methods for Otter-Trawl Nets. U. S. Bureau of Commercial Fisheries, Washington, D. C., Fishery Leaflet No. 437 (December), 29 pp.

1958. Operation of North Atlantic Type Otter Trawl Gear. U. S. Bureau of Commercial Fisheries, Washington, D. C., Fishery Leaflet No. 445 (May), 15 pp.

PETERS, JOHN A. and SLAVIN, JOSEPH W.
1956. New Techniques for Freezing and Storing North Atlantic Lobsters. Commercial Fisheries Review, vol. 18, no. 2 (July), pp. 22-23. (Also Separate No. 443.)

1958. Technical Note No. 42--Keeping Quality and Rate of Freezing of Cooked Deep-Sea Lobster Meat Frozen in Cans. Commercial Fisheries Review, vol. 20, no. 1 (January), pp. 22-27. (Also Separate No. 499.)

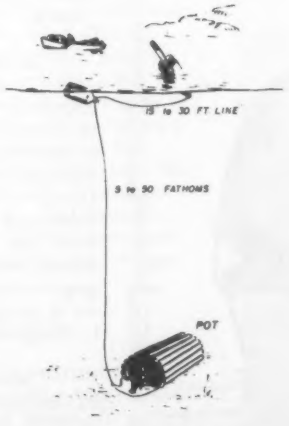
POTTINGER, SAMUEL R.
1950. Technical Note No. 7--Results of Some Tests with Frozen Lobsters and Lobster Meat. Commercial Fisheries Review, vol. 12, no. 11 (November), pp. 31-33. (Also Separate No. 268.)

SCHROEDER, WILLIAM C.
1955. Report on the Results of Exploratory Otter-Trawling Along the Continental Shelf and Slope between Nova Scotia and Virginia during the Summers of 1952 and 1953. Papers Mar. Biol. and Oceanogr. Deep-Sea Res., Suppl. to vol. 3, pp. 358-372, Pergamon Press Ltd., London.

1959. The Lobster, Homarus americanus, and the Red Crab, Geryon quinquedens, in the Offshore Waters of the Western North Atlantic. Deep-Sea Res., vol. 5, no. 4, pp. 266-282, Pergamon Press Ltd., London.

SLAVIN, JOSEPH W. and PETERS, JOHN A.
1956. Brine Cooling of Fish Aboard a Fishing Vessel. Industrial Refrigeration, vol. 131, no. 4 (October), pp. 30, 32, and 34.

1958. Freezing and Storing Deep-Sea Lobsters--Some Tests on on Cooked Whole Lobsters. Commercial Fisheries Review, vol. 20, no. 7 (July), pp. 1-6. (Also Separate No. 514.)



A SMALL-BOAT TUNA LONG-LINE FISHERY

By Peter C. Wilson*

SUMMARY

Small fishing vessels from Gloucester, Mass., have successfully fished subsurface bluefin tuna (Thunnus thynnus) on Stellwagen Bank in Massachusetts Bay using long-line gear especially adapted to inshore operations for large tuna. During the short season between mid-August and late October, boats 35 to 40 feet in length have made catches of approximately 60,000 pounds per vessel.

BACKGROUND

Seasonal bluefin tuna stocks in waters off the New England coast have for some time appeared to be substantial. However, to date, this resource has been exploited only to a limited degree.

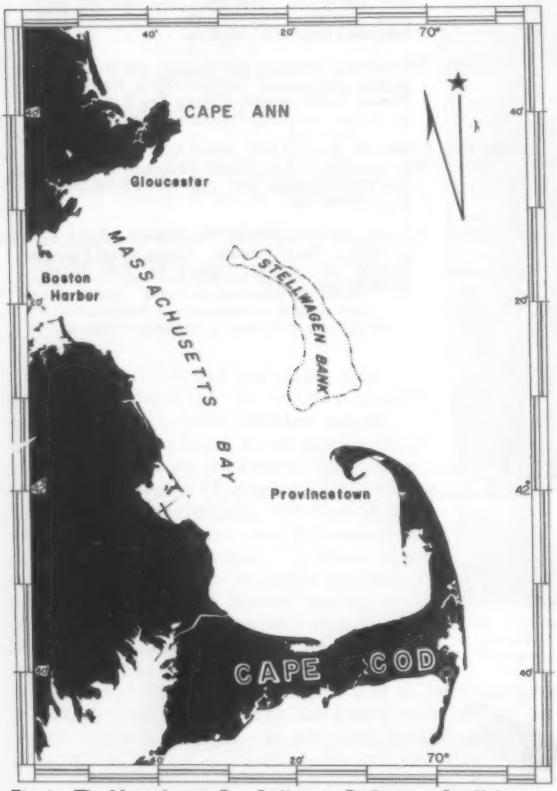


Fig. 1 - The Massachusetts Bay-Stellwagen Bank area. Small-boat long-line tuna operations are conducted in this area during a 3-month season beginning in August.

OFFSHORE TUNA: Studies made by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware over the last five years indicate the feasibility of the development of a long-line fishery in oceanic areas off New England at certain seasons, and a recent attempt by the Gloucester medium trawler Golden Eagle, using Bureau gear[1/] and assisted by technical personnel, met with limited success in one of these areas.

INSHORE TUNA: Bluefin tuna are usually found in large schools in the Massachusetts-Cape Cod Bay areas from June through October. These shcools have supported a growing sports fishery as well as small commercial fisheries for several years.

Small boats had fished surface-swimming bluefin tuna with standard swordfish harpoon-and-keg gear for many years prior to World War II. During that period several enterprising vessel owners also fished subsurface tuna with drifting baited keglines--a precursor to the development of tuna long-line fishing in the area. Since the War, the keg-line method has been largely abandoned, but small boats continue to engage in harpooning surface-swimming tuna on a small scale during June, July, and early August.

Tuna explorations with long-line gear by the chartered schooner Marjorie Parker in 1952 and 1953 (Murray 1953, 1954) indicated that appreciable tuna stocks were

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1/Long-line gear belonging to the U. S. Bureau of Commercial Fisheries was made available to commercial vessels in a cooperative agreement designed to encourage establishment of the fishery and to add to the knowledge of the resource by the collection of data to supplement that recorded aboard Bureau vessels.

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present in waters off New England, but heavy shark damage during those years discouraged initiation of a tuna long-line fishery at that time.

Commercial operations utilizing purse-seine gear have also been attempted several times during the past 20 years (Murray 1952), but substantial production of tuna by this means has been attained only recently. In the summer of 1958 the 62-foot converted shrimp trawler Silver Mink of Provincetown, Mass., produced 179 tons of bluefin tuna in a 73-day season (Squire 1959), and in 1959 the vessel set a new East Coast record for production of purse-seine caught tuna when 750 tons were landed in a 56-day season. The accessibility of the fishing areas to Provincetown was significant in the success of the Silver Mink. The majority of the operations were carried out in the immediate vicinity of Cape Cod, within a day's run to and from Provincetown. The fishing areas included Cape Cod Bay and Stellwagen Bank.

The Cape Cod Bay trap-net fishery, although not a large-scale segment of the tuna fishery, has accounted for considerable numbers of school tuna each season, particularly during the months of July and August. Three traps set for mackerel on August 5, 1948, impounded 336 tuna weighing a total of 75,000 pounds (Bigelow and Schroeder 1953).

Although the presence of tuna schools on the surface has been evident to sports and commercial fishermen for many years, the occurrence and movements of subsurface-swimming bluefin tuna have remained largely matters of conjecture. One of the best indications, to date, of the continued occurrence of these subsurface fish has come from long-line operations conducted recently on the 15- to 20-fathom northern edge of Stellwagen Bank (Middle Bank). The long-line catches indicate that subsurface bluefin tuna schools occur in the inshore area from mid-June to the end of October.

Inshore long-line fishing originated shortly after the end of World War II when the keg-line- and the halibut-line-trawl were combined and modified to form a prototype of the tuna long-line gear now in use on Stellwagen Bank. Gear used since then has been similar in principal, but has differed in construction with the ideas of the individual fishermen, the number of men used to operate the gear, and the availability of material.

Small-boat long-lining operations on Stellwagen Bank, in contrast with trap fishing and purse-seining, require only a fraction of the investment for vessels, gear, and crew. In addition, the long-line vessels can be converted readily to other types of seasonal fishing and can, thus, supplement the income of the owners and operators. For example, long-lining during June, July, and early August is hindered by the presence of large numbers of dogfish (Squalus acanthias) which often strip the long-line gear of bait. The local small boats, therefore, conduct harpooning operations until the dogfish move off the Bank in mid-August and the commercial long-line fishery, which continues through October, can be initiated. Estimated daily operating costs, based on figures obtained from 3 small Gloucester long-line boats, range from 15 to 20 dollars each.

Fig. 2 - The Gloucester tuna long-line boat Julie Ann.

EQUIPMENT AND METHODS

Typical of the small boats operating in the inshore long-line fishery is the Julie Ann, a Nova Scotia lobster boat, 40 feet in length with an 11-foot beam (fig. 2). Built in 1946, the Julie Ann has been fishing tuna from mid-June to the end of October since 1954. This boat normally converts from harpoon fishing to a single-man long-line operation at the end of August. On an aver-

age day's fishing, within 30 miles from Gloucester, a single basket (box) of gear is set. In a 4-hour fishing period the main line is under-run through a snatch block at the side of the pilothouse from 1 to 3 times depending on the size of the catch, number of snags, or amount of bait loss. Hooked tuna are gaffed and hauled aboard either by hand or with a double block. Manila branch lines[2/] are weighted with three 2-ounce seine weights and attached to the steel-cable leaders by $1\frac{1}{4}$-inch heavy-duty brass swivels. Japanese-style tuna hooks are bent to the leaders by crimped nico-press sleeves. Double-size lobster-pot buoys, 5-gallon cans, kegs, and groups of 2 trawl-net floats are used alternatively for buoys on the drop lines; and a standard-size steel beer keg buoys each end of the main line and the upper ends of the 25-fathom anchor lines. An improvised 25-pound mushroom anchor made from a truck wheel on one end of the long-line, and a 30-pound kedge anchor on the other end, holds the long line in fishing position. Depth recorder and portable RDF serve to locate fishing areas on the Bank.

Fig. 3 - Baiting a branch line with butterfish aboard the Julie Ann. Box contains a 200-fathom main line with 40 hooks.

The Gloucester boat Here We Go, also of Nova Scotia design (36 feet in length with an 11-foot beam), was built in 1950 (fig. 5). The vessel

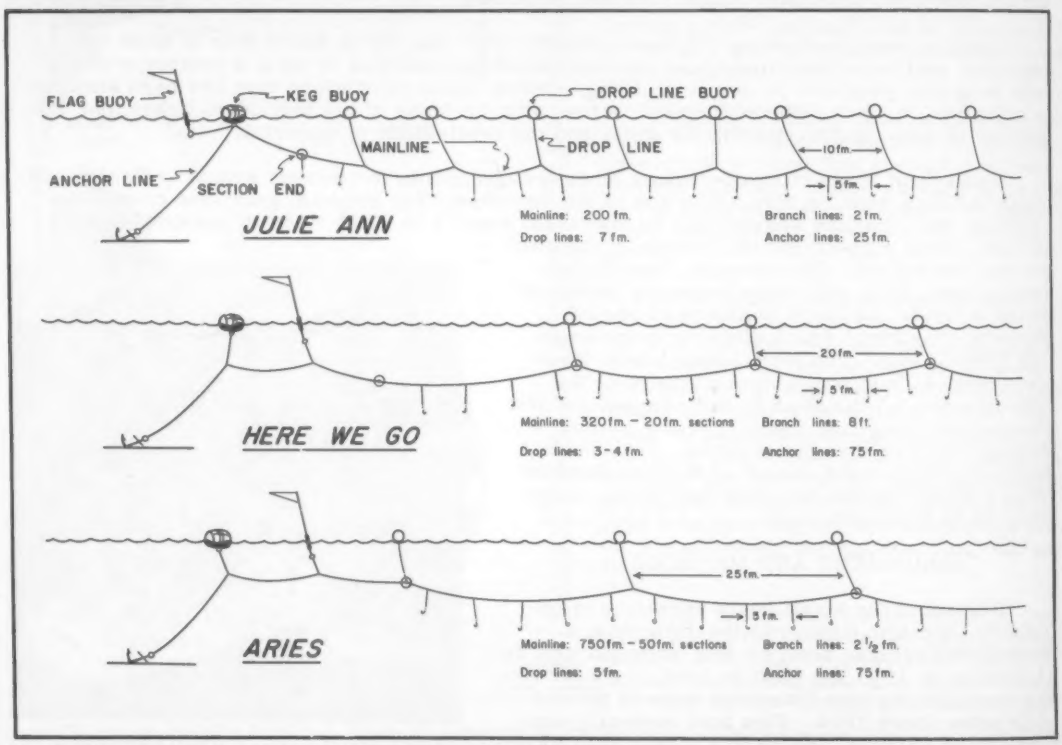


Fig. 4 - Diagram of long-line gear used by three Gloucester boats fishing for bluefin tuna on Stellwagen Bank. (Not drawn to scale.)

2/The branch lines are referred to in the New England area as "gangings"--a term derived from the halibut line fishery. In some other areas, this term apparently has been corrupted to "gangions."

owner, long-lining bluefin tuna since 1947, fishes alone. The main line is tended with the help of a lobster davit, which is equipped with an open snatch block, and a small winch head. Fish are hauled aboard over a side-rail roller. Long-line gear (table 1 and fig. 2) is set at 5 fathoms and worked 4 hours with 2 to 3 under-runs. Chum is utilized, when available, with reported success. Drop lines are spliced into the main line every four hooks and these are buoyed by seine-cork bobber sets, supplemented every sixteen hooks by a standard swordfish keg. The leaders are crimped to the gangings by nico-press sleeves, with intermediate heavy-duty brass swivels. Japanese-style 14/0 extra-heavy giant tuna hooks are also attached to the leader by nico-press sleeves. Fifteen-pound kedge anchors on 75-fathom anchor lines at each end of the set stretch the main line in a fishing position. A 15-gallon oil drum buoys the anchor line on a 4-fathom drop line attached 20 fathoms from the end of the main line. A flag buoy, also on a 4-fathom drop line, is placed on the anchor line 10 fathoms from each end of the main line. Supplementary equipment consists of radiotelephone, depth-recorder, and a 12-volt electric tuna shocking device used in surface-trolling operations.

Fig. 5 - Baskets of long line used on the Gloucester boat Here We Go. Two baskets are set to make a 320-fathom main line with 64 hooks. Note seine-cork bobber sets used as drop line buoys.

Table 1 - Small-Boat Tuna Long-Line Gear Used on Stellwagon Bank

Gear	Vessel			
	Julie Ann	Here We Go	Aries	Marianna II
Baskets:				
Construction and type	Wood, box 14x18x40 inches	Wood, trawl tub 2-bushel capacity	Wicker, garden basket, 3 bushel	Galvanized metal No. 2 tub.
Number fished	1	2	3	15
Mainline:				
Type	6-thd. synth.	5/16" synth.	5/16" synth.	11/64" synth.
Length/basket	200 fm.	160 fm.	250 fm.	138 fm.
Sections/basket	1	8	5	1
Drop Lines (float lines):				
Type	6-thd. manila	14 lb. ground trawl or 6-thd. synth.	6-thd. synth.	11/16" synth.
Number/basket	21	8	10	1
Length	7	3-4 fm.	5 fm.	5 fm.
Branch Lines (gangings):				
Type	6-thd. manila	3/16" synth. gill net maitre line	5/16" synth.	11/16" synth.
Number/basket	40	32	50	1/
Length	1½ fm.	3 ft.	1 fm.	3 fm.
Leader:				
Type	3/32" galv. steel cable	3/32" galv. steel cable	3/32" galv. steel cable	3/32" stainless steel wire
Length	81-24"	5 ft.	1½ fm.	1 fm.
Tuna Hook:				
Size	9/0	14/0	12/0, 9/0	9/0
Anchor Lines:				
Type	6-thd. manila	6-thd. synth.	9-thd. synth.	None
Length	25 fm.	75 fm.	75 fm.	None

1/Five baskets with 20 gangings and 10 baskets with 10 gangings.

The ex-Coast Guard buoy tender Aries (38 feet in length with a 12 foot beam) was built in 1945 and has been used for long-lining tuna sinch 1947 (fig. 6.). On a 4-hour set the main line is under-run through an open snatch block on a lobster davit 2 to 3 times by a 2-man crew,

and fish are hauled aboard with a winch head and a block on the side of the pilothouse. The gangings are spliced into the main line 5 fathoms apart with leaders, swivels and Japanese-style tuna hooks attached by crimped nico-press sleeves. Kedge anchors, weighing 25 pounds each and located at the ends of 75-fathom anchor lines, are used to spread the set. Two 40-fathom drop lines are attached to each anchor line. The first, attached at a distance of 10 feet from the end of the main line, bears a flag buoy; the second, positioned 20 feet from the end of the main line, terminates in a 20-gallon keg buoy.

Fig. 6 - Long-line gear aboard the Aries out of Gloucester, Mass. Three baskets are fished to make a 750-fathom main line with 150 hooks. Note rubber mackerel lure on center basket.

Fig. 7 - Bureau of Commercial Fisheries' long-line tubs aboard the small Gloucester trawler Marianna II.

Fig. 8 - A few of the 40 bluefin tuna taken in a 3½-hour set made from the Julie Ann. The catch rate for this set was 57.1 bluefin tuna per 100 hooks baited.

Using long-line gear obtained on loan from the Bureau of Commercial Fisheries[3/] (Bullis and Captiva, 1955), the small Gloucester trawler Marianna II (fig. 7) fished for bluefin tuna on September 26, 27, and 28, 1959. A single 15-basket set was made each day at 7 a.m. and gear was hauled aboard at 5 p.m. On two occasions the gear was underrun from a skiff and the main line was pulled by hand.

Bait used by the three vessels was not restricted to any one fish. Blueback herring, menhaden, mackerel, whiting, and butterfish are said to fish equally well, on the hook or when used for chum. Daily bait requirements on the Julie Ann are approximately 50 pounds, whereas the Here We Go and the Aries need from 200 to 500 pounds each to chum. The cost ranges from 1 to 3 cents a pound. Availability of bait for these operations has been dependent upon the catches of Glouces-

3/See footnote 1.

ter trap boats, draggers, and seiners. Although availability of fresh bait fish has been no problem, practical use of fresh bait has been prevented by the dogfish shark population on Stellwagen Bank during the early part of the season. On one occasion the Aries used a rubber mackerel lure with success (fig. 6).

Catch records for small commercial craft are sketchy, but the annual catch (for the 3-months fishing season) of three commercial boats fishing the inshore area is estimated roughly to exceed 30 tons per boat. Catch rates varied with the individual boat, areas fished, and other factors. On September 30, 1959, the operator of the Julie Ann achieved a catch rate of 57.1 fish per 100 hooks baited when 40 bluefin tuna were taken in the course of a $3\frac{1}{2}$-hour set consisting of $1\frac{1}{2}$ under-runs. Total weight of the catch was estimated at 5,255 pounds (fig. 8.). Throughout the season, catch rates for the other two boats fishing the same area were estimated at between 30 and 40 fish per 100 hooks baited; and, in September, the small trawler Marianna II, fishing in a nearby area, averaged 15.4 fish per 100 hooks baited in the course of a 3-day fishing period. Total catch for the period was 139 bluefin weighing 14,000 pounds dressed.

Only 7 sharks were taken on the Marianna II's gear during this 3-day period. This represents a catch rate of only 0.78 sharks per 100 hooks, and no shark damage was noted. Information from other boats indicated that few sharks were taken on long lines and no shark-damaged tuna were recorded. This is in sharp contrast with the reports of shark damage incurred while long-lining in inshore waters during the 1952-53 seasons (Murray 1953, 1954).

CONCLUSIONS

The success of long-line tuna operations on Stellwagen Bank indicates the feasibility of expanding the present small-boat tuna fishery within the Massachusetts Bay area, and the possibility of establishing similar fisheries in other selected areas off northeastern United States. The size of the vessels, low operating costs, small crews, and ability to convert readily to other types of fishing, are positive advantages of these operations.

The present short season in the Stellwagen area might be extended by developing a suitable artifical lure to overcome the dogfish problem.

Further evaluation of seasonal bluefin stocks and fishing methods on inshore waters could contribute substantially to an expansion of this fishery in the New England area.

LITERATURE CITED

BULLIS, H. R., Jr. and CAPTIVA, F. J.
1955. Preliminary Report of Exploratory Long-Line Fishing for Tuna in the Gulf of Mexico and the Caribbean Sea. Commercial Fisheries Review, vol. 17, no. 10 (October), pp. 1-20. (Also Sep. No. 416.)

MURRAY, J. J.
1952. Report on 1951 Exploratory Bluefin-Tuna Fishing in the Gulf of Maine. Commercial Fisheries Review, vol. 14, no. 3 (March), pp. 1-19. (Also Sep. No. 309.)

1953. Gulf of Maine Bluefin Tuna Explorations - 1952. Commercial Fisheries Review, vol. 15, no. 7 (July), pp. 1-17. (Also Sep. No. 353.)

1954. Gulf of Maine Bluefin Tuna Explorations - 1953. Commercial Fisheries Review, vol. 16, no. 7 (July), pp. 10-19. (Also Sep. No. 374.)

SQUIRE, J. L., Jr.
1959. New England Commercial Bluefin Tuna Purse Seining - 1958 Season. Commercial Fisheries Review, vol. 21, no. 2 (February), pp. 1-5. (Also Sep. No. 538.)

TRENDS AND DEVELOPMENTS

American Fishery Advisory Committee

INTERIOR DEPARTMENT REAPPOINTS SIX TO COMMITTEE:

Six members of the American Fisheries Advisory Committee whose terms expired on June 30, 1960, have been reappointed to 3-year terms beginning July 1, Assistant Secretary of the Interior Ross Leffler announced July 6, 1960.

The appointees are: Ralph E. Carr, President, Mid-Central Fish Co., Kansas City, Mo.; Chris Dahl, Kayler-Dahl Fish Co., Petersburg, Alaska; H. R. Humphreys, Jr., President, Standard Products Co., White Stone Va.; Leon S. Kenney, President, Pinellas Seafood Co., St. Petersburg, Fla., James McPhillips, Vice President, Southern Industries Corp., Mobile, Ala.; and Arthur H. Mendonca, President, F. E. Booth Co., Inc., San Francisco, Calif. Kenney and Mendonca have served with the Committee since it was organized on February 14, 1955. There were then 19 members; later, this number was raised to 20.

Authority for the creation of the Committee is carried in the Saltonstall-Kennedy Act of 1954. The purpose of the Saltonstall-Kennedy Act is to promote the free flow of domestically-produced fishery products in commerce, to develop and extend markets, and to assure necessary research.

The original Advisory Committee was considered to be temporary since the life of the legislation was only three years. In 1956, however, the Fish and Wildlife Act extended the Saltonstall-Kennedy legislation indefinitely. The committee acquired permanent status effective July 1, 1957. The rules governing appointments provide for a basic 3-year term for members and permit one 3-year reappointment. One-third of the membership is changed each year.

The Committee will hold its next meeting in the Olympic Hotel, Seattle, Wash., August 10-12. Assistant Secretary Leffler is the Chairman. At these meetings, it is customary for the Bureau of Commercial Fisheries to review its activities and to outline its future plans. The Committee advises the Secretary and the Bureau of Commercial Fisheries in the formulation of policy, rules, and regulations pertaining to requests for assistance under the terms of the Saltonstall-Kennedy Act, and other matters.

Besides the six members reappointed, the Committee consists of: William P. Ballard, President, Ballard Fish and Oyster Co., Inc., Norfolk, Va.; Lawrence Calvert, President, San Juan Fishing and Packing Co., Seattle, Wash.; Harold F. Cary, Van Camp Seafood, Inc., Long Beach, Calif.; Ray H. Full, Treasurer, Kishman Fish Company, Vermilion, Ohio; David H. Hart, fisherman and boatowner, Cape May, N. J.; J. W. Lewis, President, Twin City Fishermen's Cooperative Association, Inc., Morgan City, La.; Donald P. Loker, Star-Kist Foods, Inc., Terminal Island, Calif.; J. Richard Nelson, F. Mansfield and Sons Co., New Haven, Conn.; Moses B. Pike, General Manager, Holmes Packing Corp., Eastport, Maine; Harry F. Sahlman, Sahlman Sea Foods, Fernandina Beach, Florida; Arthur S. Sivertson, Sivertson Bros. Fisheries, Duluth, Minn., and Lawrence W. Strasburger, technological consultant, Metairie, La. There are two vacancies on the Committee.

American Samoa

TUNA LANDINGS, JUNE 1960:

Landings of tuna by Japanese, South Korean, and native long-line vessels at the United States-owned tuna cannery in American Samoa totaled 2,944,000 pounds in June 1960, an increase of about 39.5 percent from the 2,111,000, pounds landed in June a year ago. For the first six months of 1960 landings amounted to 13,552,000 pounds as compared with 12,196 pounds landed the same period of 1959.

American Samoa Tuna Landings, June 1960 and January-June 1960

Species	June		January-June	
	1960	1959	1960	1959
	(1,000 Lbs.)			
Albacore	2,061	1,533	11,058	9,078
Yellowfin	197	459	1,429	2,514
Big-eyed	686	119	1,055	604
Skipjack	1/	–	10	1/
Total	2,944	2,111	13,552	12,196

1/ Less than 500 pounds.

California

COLORED LIGHTS FOR ATTRACTING FISH AND NEW METHOD OF SETTING SAMPLING NETS TESTED:

M/V "Alaska" Cruise 60A5-Pelagic Fish: The coastal waters off southern California from San Pedro to Palos Verdes Point, and Santa Catalina Island were surveyed (May 16-June 4, 1960) by the California Department of Fish and Game research vessel Alaska to test the effectiveness of several types of lights for attracting gish, and to experiment with new methods of setting fish-sampling nets.

California Department of Fish Game's research vessel M/V Alaska.

Tests were conducted on 28 stations to determine the relative effectiveness of fish attraction of underwater colored lights compared with the regular 1500-watt incandescent standard sampling light. A 500-watt underwater lamp with interchangeable colored filters was used. The two lamp types were used separately on alternate stations. Stations were located in clear water where fish were known to be present.

At 22 of the 28 stations a blue lens was used alternating with the standard 1, 500 watt lamp. The blue lens attracted sardines on 2 of the 11 stations at which it was used, jack mackerel on 2, and Pacific mackerel on 1. The standard light attracted sardines on 5 of the 11, jack mackerel on 2, Pacific mackerel on 1, anchovies on 1, bonito on 1, and athernids on 4.

In the remaining 6 tests, an underwater amber lens attracted sardines on 1 of the 3 stations at which it was used. Sardines were also attracted to 1 of the 3 alternate standard light stations.

To test the effectiveness in catching fish under different colored lights, fish were attracted with a surface light, an underwater light was then turned on and the surface light extinguished. Observations of fish behavior were then made. On each station the amber, blue, clear, and red lenses were used. Fish behavior was not noticeably altered by the amber, blue, or clear lenses. A milling school of sardines or anchovies under the surface light continued to mill in the same pattern when the underwater lamp was lighted and the surface light extinguished. When the red lamp was turned, sardines, in each case, left the red light zone. Reaction to the red light may have been a function of low light intensity rather than a response to the red color. Sardines did not avoid the red light zone when an overhead incandescent lamp was turned on simultaneously.

None of the underwater lenses tested altered fish behavior to the extent that it made them more susceptible to capture. However, when sardine or anchovy schools were given a preference, invariably they were attracted to the brightest light source.

A sampling gill net was set on 5 schools of "wild" sardines which were extremely difficult to catch with the blanket net. Sardines were obtained in each set. The degree of "wildness" in sardines varied between schools. The presence of bonito, barracuda, sharks, and other predators considerably increased the degree of "wildness" in a school.

* * * * *

NEW MIDWATER TRAWL NET TESTED ON SALMON FRY:

M/V "Nautilus" Cruise 60N4: An experiment with a new midwater trawl net (15 feet square

M/V Nautilus Cruise 60N4 (June 2-9, 1960).

opening by 65 feet long) for capturing salmon fry was conducted (June 2-9, 1960) by the California Department of Fish and Game research vessel Nautilus in outer San Francisco Bay, from Bonito Point to Benicia in Carquinez Strait. Other objectives of the survey were to determine at what depths salmon are located and in what areas, and to recover as many marked salmon as possible.

The Nautilus completed 44 tows with the midwater trawl net. A total of 232 salmon fry was captured. Of these, 6 were marked (salmon released in Sacramento River earlier this year)--4 dorsal right ventral fin-clipped fish released into the River at Rio Vista and 2 dorsal left ventral fin-clipped fish released into Battle Creek.

Trawling was done at various depths and distances from shore. Small salmon were found in all areas tried. Largest numbers were taken very near the surface. They were found to be distributed at various distances from shore.

The trawl net was a small copy of a net developed in 1953. Its mouth was held open by 4 doors 1½ feet x 2 feet, acting as kites. Some trawls were made with 2 small otter doors placed 75 feet forward of the quarter doors. This made the net fish slower and deeper than it did without otter doors. Only 20 salmon were caught with this method. All remaining salmon were caught with quarter doors while fishing on the surface. Average towing speed was between 4 and 5 miles per hour. At this speed the net's mouth was forced together slightly by pressure. This reduced the effective fishing area of the net to about 9 square feet.

The 2 most common species taken were northern anchovy, Engraulis mordax (about 900 pounds of 1-5-inch fish) and herring, Clupea pallasii (about 200 pounds of 2-6 inch fish). Other fish taken in small numbers were: striped bass, Roccus saxatilis; jack smelt, Atherinopsis californiensis; starry flounder, Platichthys stellatus; shad, Alosa sapidissima; split-tail, Pogonichthys macrolepidotus; California pompano, Palometa simillima; a few species of family Embiotocidae; and a few young fresh-water smelt and greenling sea trout.

* * * * *

PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 60-12-Pelagic Fish: The inshore area from the California-Mexican border north to Bodega Bay was surveyed from the air (June 15-17, 1960), by the Department's Cessna "180" 3632C to determine the distribution and abundance of pelagic fish schools.

Low clouds and fog prevailed over most of the California coast during the five days scheduled. The ocean was visible in only two areas north of Point Dume: from Carmel to Cape San Martin, where no schools were seen; and a small section at the south end of Bodega Bay where about 25 anchovy schools were found.

During one day when fair conditions of visibility prevailed, it was possible to scout the extreme inshore area from Point Vicente to the Mexican border; no schools were seen.

Red tide was observed in the San Pedro end of Los Angeles-Long Beach harbor and along the beach from Malibu to Ocean Park.

Note: Also see Commercial Fisheries Review, Aug. 1960, p. 14.

Canned Sardines

MARKETING STUDIES SHOW CONSUMER BUYS ON IMPULSE:

A sizable amount of canned sardines marketed in the United States are purchased by consumers on impulse. This is one of several findings of a survey of consumer attitudes toward canned sardines which are included in a report entitled Who Buys Canned Sardines, and Why.

The new U. S. Bureau of Commercial Fisheries report is based on a survey of the factors that motivate consumer preferences for canned sardines, conducted by a research firm under a contract from the Bureau.

The survey found that among the users of sardines, 12 percent in Boston, 21 percent in Birmingham, Ala., and 31 percent in Detroit bought sardines on impulse. When asked what would induce them to use more sardines, about one-fifth of the household consumers said that they eat sardines often enough; in addition, 46 percent in Boston, 27 percent in Birmingham, and 21 percent in Detroit stated that nothing would induce them to use more sardines. However, 17 percent in Birmingham and 15 percent in Detroit stated that a lower price would increase their buying. Only 4 percent in Boston mentioned price. Removal of bones, and/or removal of skin were also mentioned as inducements for greater use by about 20 percent of the consumers interviewed in Detroit, 10 percent in Boston, and 8 percent in Birmingham.

Cans--Shipment for Fishery Products, January-May 1960

Total shipments of metal cans during January-May 1960 amounted to 49,682 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 43,046 tons in the same period a year ago. The increase of about 15.4 percent in the total shipments of metal cans January-May this year as compared with a similar period of 1959 was probably due to early orders in anticipation of a sharp increase in the Alaska canned salmon pack.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

Central Pacific Fisheries Investigations

FLUCTUATIONS IN HAWAII'S SKIPJACK TUNA CATCH MAY BE DUE TO CHANGES IN OCEANIC CIRCULATION:

Biologists and oceanographers of the Honolulu Biological Laboratory of the U. S. Bureau of Commercial Fisheries are attempting to learn the reasons for the wide annual fluctuations in the skipjack catch from Hawaiian waters. Briefly, they assume that the changes in catch are related to changes in the oceanic circulation or flow of water. One aspect of this circulation which appears to be important is the California Current Extension which flows toward Hawaii from off the California coast. To better understand this feature of the oceanic circulation, scientists from the Bureau of Commercial Fisheries Honolulu Biological Laboratory undertook a series of five cruises during 1959 covering an area between 12° and 25° N. lat. and 145° and 170° W. long., approximately 1 million square miles of ocean.

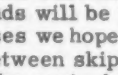
The results of these cruises show that the circulation changes substantially during the year. In the winter, the flow of western North Pacific water effectively bars the California Current water from entering the island area. As the year progresses, the strength of the California Current increases and during spring and early summer this water gradually pushes into and beyond the Hawaiian Islands. In mid-summer the western North Pacific system increases in strength and again gradually replaces the California Current water around the islands. This process of the advance and retreat of the California Current Extension is apparently an annual occurrence, although the extent and time of the advance may vary from year to year.

Records of the bird flocks and fish schools seen during the five cruises afford some ideas as to the relation between the environment and the distribution of tunas. Fish were also caught by pole-and-line fishing and by long-

line gear. Skipjack were considerably more abundant to the southwest of the Hawaiian Islands than to the east. They also appeared to be more abundant near the boundaries between the western North Pacific water and the California Current Extension. Long-line catches varied considerably among cruises, with the best catches taken during the winter months.

How the changes in circulation affect the Hawaiian skipjack fishery is still unknown. One hypothesis is that the fish use the California Current Extension as a guide or signpost in their migrations. These migrations may be for the purpose of reaching feeding areas or areas favorable for reproduction. Plankton collections made during the 1959 cruises do not show that any of the areas surveyed are especially rich in food. Because of this it appears more likely that skipjack may migrate in the Hawaiian area because conditions are suitable for spawning and survival of young. Examination of the plankton collections for skipjack larvae, a time-consuming and tedious task, is in progress. Results of these examinations should show whether more spawning takes place in certain areas than in others.

Cruises to the east and southwest of the Hawaiian Islands will be made during 1961. On those cruises we hope to learn more about the relation between skipjack and their environment in the central Pacific.



Chesapeake Bay

COAST AND GEODETIC SURVEY TO ASSIST IN DEVELOPMENT OF FISHERY RESOURCES:

A dual purpose survey of the Chesapeake Bay, scheduled to start early in July 1960, was announced by the U. S. Coast and Geodetic Survey. That agency will undertake a 1,500-mile shoreline survey in cooperation with the Maryland Department of Tidewater Fisheries.

The Coast and Geodetic Survey Director said that the project will provide 37 special shoreline maps for Maryland to assist in their study and development of fishery resources--especially oyster cultivation. In addition, the Survey will revise about 80 of its own large-scale base maps of the Bay with the aerial photography and field data thus acquired. Both Maryland and the Federal Government will share the expense of this project, which is expected to cost about $120,000.

An aerial photographic mission started flights during the first week of July near the mouth of the Potomac River. The photography will be accomplished in two distinct phases. Black-and-white film will be used for the revision of land details on the maps, and infrared film employed to emphasize shoreline detail at a mean high stage of the tide. Photogrammetrists know that infrared rays are absorbed by water; thus using this special film, water areas on infrared photographs become black, in sharp contrast to land details. All shore-line photography will be taken when the tide reaches a predetermined level--that of mean high water, and consequently, details can be interpreted from the photography and mapped by rapid office methods without the expense of extensive field surveys.

Two crews will work in the field, locating existing triangulation stations and selecting and identifying prominent objects and marks to be mapped. These alongshore objects will be used by the Department of Tidewater Fisheries as survey points from which they can divide and study the offshore oyster bars and other areas of interest to the seafood industry of Maryland. Many of these "landmarks" will also be included on future editions of nautical charts of the Bay, because of their special interest to the mariner.

Office phases of this project will include "measurement" of the photographs in precision instruments, such as the stereoplanigraph, to control the mapping operation; a careful study of all photography and the revision of existing maps; compilation, scribing or engraving of new map copy; and printing of special maps for the Department of Tidewater Fisheries.

Cooperation between Maryland agencies and the Coast and Geodetic Survey has been commonplace for many years. In 1906, for example, a joint survey was begun of the Chesapeake Bay under the direction of the now defunct Maryland Shellfish Commission. The Survey, between 1906 and 1912, produced 42 detailed oyster charts for the Commission. The Maryland Oyster Survey used these charts with considerable success through the years.

In the period from 1935 until 1945, the Coast and Geodetic Survey completed a new series of planimetric and topographic base

maps of the Chesapeake Bay coastal areas. Aerial photography and field surveys accomplished in 1960 will be used to revise the base maps, and provide most of the source material for the construction of the special maps for the State of Maryland.

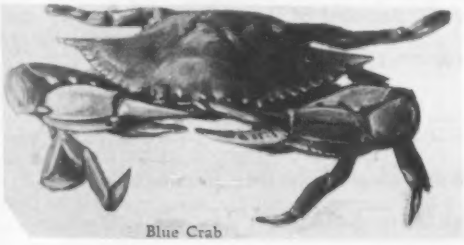
The result of this new cooperative survey is expected to be of significant value to the fishing industry.

Crabs

CHESAPEAKE BAY SHORTAGE ENDED:

The shortage of blue crabs which has plagued Chesapeake Bay crab fishermen and processors of crab meat since January 1960 will end by mid-summer, scientists at the Virginia Fisheries Laboratory, Gloucester Point, reported on July 11.

The biologist in charge of the crab research project at the Laboratory reports that at least three times as many soft and peeler crabs were caught in June of this year as were landed in the same period in 1959. "This verifies again our belief that a large supply of crabs was produced from spawning in midsummer 1959," he stated. Numerous fingernail-sized crabs were caught in November 1959, during one of the Laboratory's regular monthly surveys.



Blue Crab

"Soft and peeler crabs should remain abundant through August," the biologist predicted, "and crab-potters will have above average catches throughout August and this fall; the winter dredge catches will be larger than usual in 1960/61. Hard crab catches by pots and peeler catches with scrapes and fykes should remain high during the spring and early summer of 1961, barring the unforeseen."

Predictions of catches a year in the future are based on observations of the number of small crabs caught with an experimental trawl by the Pathfinder, the Laboratory's research vessel, and from reports of the hard and peeler crabs caught by commercial crabbers.

Films

FISHING ON GREAT LAKES SUBJECT OF NEW INTERIOR FILM:

The romance of "fishing on the lakes" will be portrayed in a sound-color motion picture now in production, the U. S. Department of the Interior announced July 10, 1960. Fishery activity on all the Great Lakes will be documented. Because so much of the material in the film is of a seasonal nature, the actual filming will require more than a year. The picture will be ready for distribution on a free-loan basis in about a year and a half.

The commercial fisheries picture, sponsored by the Outboard Marine Corporation, is being produced and will be distributed by the Bureau of Commercial Fisheries, Fish and Wildlife Service.

This is the second commercial fisheries film sponsored by the Outboard Marine Corporation and produced by the Bureau of Commercial Fisheries as part of the Bureau's policy of working cooperatively with the industry in the production of fishery educational films. The first, Outboard Fisherman USA, received wide acclaim in this country and won awards at the Edinburgh, Scotland, Film Festival in 1956.

Two additional films more recently produced by the Bureau were exhibited at the Columbus, Ohio, Film Festival and received the Chris Awards from the Film Council of Greater Columbus. These were Salmon--Catch to Can sponsored by the Canned Salmon Institute and Outdoor Fish Cookery, a Bureau-financed production.

The Bureau of Commercial Fisheries is currently producing a picture for the natural sponge industry. This picture is sponsored by the Sponge and Chamois Institute and the sponge industry of Tarpon Springs, Fla.

Fisheries Loan Fund

FISHERIES LOANS
APPROVED FISCAL YEAR 1960:

During fiscal year 1960 (July 1, 1959 to June 30, 1960), applications for fisheries loans totaling 190 and valued at $5,328,956 were received by the U. S. Bureau of Commercial Fisheries. Of the total, 105 applications for $2,220,024 were approved and 65 applications for $1,927,302 were declined or found ineligible. Funds are available for additional loans, and new applications will be processed promptly.

From the beginning of the program in December 1956 through June 30, 1960, a total of 777 applications for $24,231,119 have been received. Of these, 422 ($9,933,257) have been declined or found ineligible, 66 ($4,231,122) have been withdrawn by applicants before being processed, and 22 ($1,622,687) are pending. Of the applications approved, 157 were approved for amounts less than applied for--the total reduction was $1,074,551.

The following loans were approved during April, May, and June of 1960:

New England Area: Archie M. Alley, Jr., Beals, Me., $3,500.

South Atlantic and Gulf Area: Edgar J. Taylor, Ft. Myers, Fla., $12,500; Trawler Austin, Inc., Tampa, Fla., $21,667; and Mike Gianaras, Tarpon Springs, Fla., $3,000.

California: Walter T. Cramer, Eureka, $17,742; Fern D. Henry, Lakeside, $6,425; The Ambrose Co., Vessel Ronnie S, San Diego, $120,000; The Ambrose Co., Vessel Wiley V. A., San Diego, $110,000; Daniel A. Marks, et al, M/V South Coast, San Diego, $80,000; Malcolm S. Rice, et al, M/V American Enterprise, San Diego, $80,000; and George Collins, Trinidad, $6,500.

Pacific Northwest Area: Alex C. Prankard, Olympia, Wash., $1,250; Ludvik M. Dahlberg, Seattle, Wash., $23,000; Ola Hendricks, Seattle, Wash., $14,489; Hans Hoddevik, Seattle, Wash., $60,000; Ottar G. Larsen, Seattle, Wash., $8,000; Commander, Inc., Tacoma, Wash., $75,475; and Seafarer, Inc., Tacoma, Wash., $61,971.

Alaska: George Hippert, Ketchikan, $4,900; Emil Christoffersen, Kodiak, $7,000; William F. Love, Petersburg, $1,500; Henry A. Nelson, Petersburg, $1,500; Dez Gunderson, Seldovia, $12,000; Theodore Pederson, Seldovia, $9,000; and Joseph E. Redington, Wasilla, $3,000.

Hawaii: KHH Fishing Co., Hilo, $3,250.

Note: See Commercial Fisheries Review, June 1960 p. 26, May 1960 p. 20, March 1960 p. 21.

Fishing Vessel Mortgage Insurance

NEW PROGRAM STARTED:

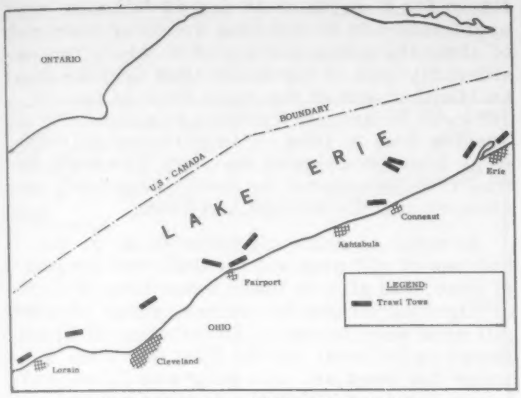
A new program (Public Law 86-577) to insure mortgages which are given to assist in the construction, reconstruction, and reconditioning of fishing vessels has been started, Assistant Secretary of the Interior Ross Leffler announced on July 9, 1960. This new program will operate similarly to the mortgage insurance on houses which is provided by the Federal Housing Administration.

Under this plan the U. S. Department of the Interior, through its Bureau of Commercial Fisheries, will insure the entire amount of the mortgage, which may not exceed 75 percent of the cost of vessel construction or reconditioning. The mortgage cannot extend more than 15 years nor can it bear interest of more than six percent. The insurance premium will be one percent a year when the face amount of the mortgage represents more than 50 percent of the cost of the work, and $\frac{3}{4}$ of one percent when it is 50 percent or less of the cost.

Great Lakes Fisheries Exploration and Gear Research

SEASONAL DISTRIBUTION STUDIES OF COMMERCIAL FISH STOCKS IN LAKE ERIE CONTINUED:

M/V "Active" Cruise 10: The second in a series of cruises scheduled for Lake Erie was conducted (June 6-16, 1960), by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Active to obtain additional information on the seasonal distribution of fish stocks. Erie will be the new permanent base of operations for the eastern Great Lakes.



M/V Active Cruise 10 (June 6-16, 1960).

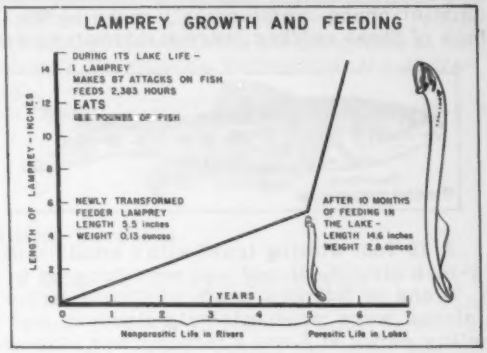
Extensive echo-sounding operations conducted from Vermilion, Ohio, to Erie, Pa., failed to locate any large concentrations of smelt. These results were anticipated on the basis of previous records during this time of year in Lake Erie. Trawling was only carried out in restricted areas where echo-tracings gave sufficient indication that commercial quantities could possibly be harvested. Half-hour drags generally caught from 90-130 pounds of medium (15-20 per pound) smelt. Thermal stratification with a sharp thermocline was observed throughout the area. Surface temperatures in the open lake ranged from 55°-68° F.

Note: Also see Commercial Fisheries Review, Aug. 1960 p. 23.

Great Lakes Fishery Investigations

HIGH WATER HAMPERS LAKE SUPERIOR SEA LAMPREY CONTROL PROGRAM:

Electrical devices for control of the sea lamprey were placed in operation in Lake Superior tributaries on schedule this spring, but extreme high water handicapped operations over a 6-week period. It was impossible even to service traps at some installations for periods in excess of 30 days. An attempt was made to keep all devices functioning throughout the flood even though lampreys could bypass the structures. Sea lamprey escapement past the barriers was possible at all installations except Pendills Creek. The most serious damage occurred to the Bad River installation where destruction was so extensive that repair is not planned. In addition to the Bad River, operation of the Big Garlic River installation ceased on May 29, 1960, as a result of a change in the ownership of the property. Damage at the remaining installations was relatively light.



Control barriers out of operation were repaired as soon as water levels receded or access roads and bridges were passable and 35 control devices are now in operation. Captures of adult sea lampreys totaled 27,869 by June 17. These same control devices caught 42.175 adults during the same period in 1959.

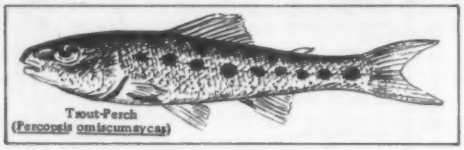
Although the captures to June 17 represent a reduction of nearly 34 percent in the number of adults as compared with the same period of time in 1959, it cannot be considered indicative of the actual population, since no knowledge of the number of sea lampreys that bypass the controlling devices during periods of extensive high water is available. Heavy but unmeasured mortality of adult sea lampreys occurred at some devices during high-water periods.

* * * * *

LAKE MICHIGAN POPULATION SURVEY CONTINUED:

M/V "Cisco" Cruise 3: The chub (Leucichthys sp.) population survey in southern Lake Michigan was continued (June 7-21, 1960) by the U. S. Bureau of Commercial Fisheries research vessel Cisco. Trawl catches during this cruise were generally small. Thirty-minute tows with a 52-foot ballon trawl at 5-fathom intervals from 15 to 35 fathoms, and at 50 fathoms, west-southwest of Grand Haven, Mich., yielded 36 to 272 pounds of chubs. Similar tows at 5-fathom intervals from 15 to 35 fathoms west-northwest of St. Joseph, Mich., took 35 to 235 pounds of chubs. The best catches were at the shallower depths.

Practically all the chubs were bloaters (Leucichthys hoyi). No species other than chubs were taken in significant quantities. The poor trawl catches, also reported by commercial fishermen, suggest that many of the smaller chubs, which usually make up the bulk of these catches, were at midwater levels.


Trout-Perch
(Percopsis omiscumaycus)

A 39-foot whiting trawl with a small-mesh ($\frac{1}{2}$-inch stretched) cod end was dragged in 5, 7, and 10 fathoms south of Grand Haven. Catches were predominately alewives and yellow perch at 5 and 7 fathoms and bloaters and yellow perch at 10 fathoms. Also numerous at 5 and 7 fathoms were smelt, trout-perch, and spottail-minnows; less common were whitefish (2), longnose suckers (1), and log-perch (1). Yearling perch averaged about 3.2 inches, and yearling smelt about 2.6 inches.

Gangs of nylon gill nets (50 feet each of $1\frac{1}{4}$- and $1\frac{1}{2}$-inch mesh, and 300 feet each of 2-, $2\frac{3}{8}$-, $2\frac{1}{2}$-, $2\frac{3}{4}$-, 3-, $3\frac{1}{2}$-, and 4-inch mesh) set overnight at 25 and 50 fathoms off Grand Haven, made heavier catches than during cruise 2, except in the smallest ($1\frac{1}{4}$-inch) mesh. Thus it appears that more of the larger than of the smaller chubs have remained near the bottom. The chubs in the gill nets were about 99 and 95 percent bloaters at 25 and 50 fathoms, respectively. The remainder were L. reighardi, L. zenithicus, L. alpenae, and, at 50 fathoms L. kiyi. Catches included also a few lake herring (L. artedi). L. reighardi has practically completed spawning, which began in late April. Gangs of nylon gill nets set overnight at 25 and 50 fathoms off St. Joseph took fewer chubs than did those off Grand Haven, but at 25 fathoms the percentage of fish other than bloaters was higher. The catch at 25 fathoms was 324 L. hoyi, 6 L. zenithicus, 3 L. reighardi, 2 L. alpenae, and 25 lake herring; at 50 fathoms it was 266 L. hoyi, 2 L. zenithicus, 8 L. reighardi, 2 L. alpenae, 1 L. kiyi, and 3 lake herring.

A gang of linen gill nets consisted of 255 feet each of $2\frac{3}{8}$-, $2\frac{1}{2}$-, $2\frac{5}{8}$-, $2\frac{3}{4}$-, and 3-inch mesh and another gang of twice this amount of each mesh size were set off Grand Haven for 5 nights at 25 and 50 fathoms, respectively. At 25 fathoms the catch consisted of about the same number of bloaters but considerably less of the other chub species than an identical set at the same time of year in 1954. At 50 fathoms the catch was higher for all species than in 1954. Comparisons will have to be made throughout the year, however, before conclusions can be drawn regarding relative abundance in 1954 and 1960.

In order to study the differences in the catches of gill nets set for different lengths of time, and also to learn something of night-to-night variations in catches, gangs of nylon gill nets were fished at 50 fathoms off Grand Haven as follows: on the first day after 4 gangs had been set, one gang was lifted, and reset; the second day the 1-night set and a 2-night set were lifted, and one of the gangs was reset; on the third day no nets were lifted, due to stormy weather; on the fourth day all three remaining gangs were lifted. Thus there were two each of 1-night, 2-night, and 4-night sets. The 1-night set took 553 and 826 chubs, the 2-night sets 1,106 and 1,189, and the 4-night sets 2,002 and 2,000. All mesh sizes except the 2-inch caught nearly twice as many fish in the 4-night sets as in the 2-night sets, so that they apparently were fishing well for the full 4 nights. The 2-inch mesh, which caught considerably more than any other mesh, appeared to have "loaded up" after two nights, however. The catches for this mesh were 325 and 402 in the 2-night sets and 465 and 467 in the 4-night sets.

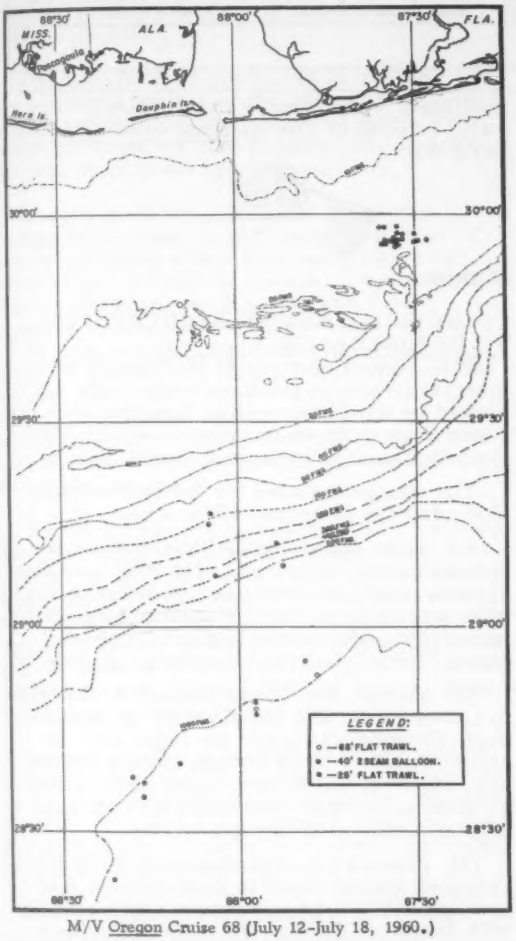
Complete hydrographic observations and collections were made at 25-fathom stations off Grand Haven and St. Joseph. Surface temperatures were lower in a narrow band near shore (mostly 6° to 8° C.--42.8° to 46.4° F.) than farther out (mostly 11° to 15° C.--51.8° to 59.0° F.) except at the end of the cruise when strong winds partially broke up the thin epilimnion offshore and dropped surface temperatures there to about 8° C. (46.4° F.). Extreme open-lake surface temperatures recorded were 5.4° C. (41.7° F.) and 17.2° C. (63.0° F.).

Gulf Exploratory Fishery Program

DEEP-SEA COMMERCIAL-TYPE TRAWLING METHODS STUDIED IN NORTH-CENTRAL GULF:

M/V "Oregon" Cruise 68. Studies of deep-sea trawling methods, which were initiated in

1958, were continued by the U. S. Bureau of Commercial Fisheries[1] exploratory fishing vessel Oregon during a seven-day cruise that ended on July 18, 1960.



M/V Oregon Cruise 68 (July 12-July 18, 1960.)

A total of 10 drags was attempted along the 1,000-fathom depth contour, using 60-foot and 40-foot shrimp trawls. The major trawling problem was bogging the gear in soft mud bottom, which occurred on six of the drags. Two drags resulted in catches of approximately 50 pounds of fish, crustaceans, and miscellaneous invertebrates. Both catches were heavily coated with lube-oil sludge. Two drags were water hauls.

A series of five drags were made off Mobile Bay between depths of 80 and 575 fathoms. Of particular interest was a 58-pound catch of unusually large royal-red shrimp from 240-245 fathoms which averaged about 16-18 count (heads-off) per pound.

A 40-bushel sample of calico scallops was caught on the return leg of the cruise. These were brought in whole for shucking tests at the Bureau's Pascogoula Technological Laboratory.

Note: Also see Commercial Fisheries Review, November 1959 p. 38.

Maine Sardines

BOY SCOUTS SERVED SARDINES:

Almost 60,000 Boy Scouts ate 60,000 cans of Maine sardines at their National Jamboree at Colorado Springs during the latter part of July. The Maine Sardine Council donated the sardines to the scouts as a duplicate of a similar operation at the 1957 Jamboree at Valley Forge, Pa.

The sardines were served as the main item of a quick meal as the boys arrived at the site from all sections of the country. The second serving was a farewell snack as they left for home. The cans had a specially-designed cover commemorating the Jamboree.

Last year the Council served Maine sardines to 20,000 Girl Scouts at their National Campfire.

* * * * *

CANNED STOCKS, JULY 1, 1960:

Distributors' stocks of Maine sardines totaled 172,000 actual cases on July 1, 1960, a drop of 2 percent from the 176,000 cases on hand July 1, 1959. Stocks held by distributors on June 1, 1960, amounted to 197,000 cases, and on April 1, 1960, totaled 252,000 cases, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on July 1, 1960, totaled 359,000 standard cases (100 $3\frac{3}{4}$-oz. cans), a decrease of 63,000 cases (15 percent) as compared with July 1, 1959. Stocks held by canners on June 1, 1960, amounted to 235,000 cases and on April 1, 1960, amounted to 397,000 cases.

Table 1- Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, July 1, 1960, With Comparisons[1/]

Type	Unit	1959/60 Season					1957/58 Season				
		7/1/60	6/1/60	4/1/60	1/1/60	11/1/60	7/1/59	6/1/59	4/1/59	1/1/59	11/1/58
Distributors	1,000 actual cases	172	197	252	235	296	176	197	254	268	312
Canners	1,000 std. cases[2/]	359	235	397	843	1,001	422	272	474	891	1,037

1/Table represents marketing season from November 1-October 31.
2/100 3¾-oz. cans equal one standard case.

The 1960 pack (from the season which opened on April 15, 1960) as of July 23 was about 677,000 standard cases as compared with 673,000 cases packed in the same period of 1959. The April 1, 1960, carryover was about 335,000 cases, substantially lower than the carryover of 420,000 cases on April 1, 1959.

Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS, SUMMER 1960:

United States civilian consumption of fishery products in the summer and fall of 1960 was expected to continue close to that of a year earlier. Supplies of the processed items were expected to remain lower than a year ago until marketings of the 1960 pack of the canned commodities started in volume during late summer. Retail prices of fish and shellfish may average a little lower this summer and early fall than last.

Commercial landings of food fish and shellfish are now at the season's peak. The annual total for this group may be higher than in 1959, when the catch of both salmon and sardines was unusually small.

Supplies of fishery products were somewhat lower this January-June than last. Stocks of the frozen commodities at the beginning of 1960 were well above those of a year earlier, but canned fishery products were much lower. The catch and imports of food fish and shellfish through midspring also were down. Civilian per capita consumption of these foods was maintained at the year-earlier level by drawing on stocks. Retail prices averaged a little lower than in the first half of 1959 because of the lower prices this past winter.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the former agency's July 29, 1960, release of The National Food Situation (NFS-93).

Michigan

COMMERCIAL FISHING REGULATIONS TO BE LIBERALIZED:

Five liberal changes in Michigan's commercial fishing regulations tentatively approved by the Conservation Commission were due to come up for discussion on July 25, 1960, at public hearings in Escanaba and Lansing.

The changes, slated for formal commission adoption in August 1960, would:

(1) Allow commercial fishermen under special permit to use gill nets with less than 2½-inch mesh for taking chubs, herring, alewife, and smelt in those southern Lake Michigan waters where trawling for those so-called "industrial fish" became legal June 12.

(2) Shorten the closed season on whitefish in Lakes Huron and Michigan by 15 days to begin October 15; lower the legal size on catfish from 17 to 15 inches, except in Lake Erie where it would be dropped from 15 to 14 inches, provided that these fish be sold only at docks on or along the lake.

(3) Remove the closed season on black crappies (calico bass) in Lake Huron; and match the season on yellow perch in Green Bay with the June 1-April 25 season in Lake Michigan.

North Atlantic Fisheries Exploration and Gear Research

OTTER-TRAWL PERFORMANCE OBSERVED WITH UNDERWATER TELEVISION:

M/V "Delaware" Cruise 60-9: Observations of otter-trawl gear performance utilizing underwater television from the

U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware were conducted June 10-28, 1960. A photographic record was made from the shipboard television monitor showing otterboard action at various speeds.

Operations were conducted in waters near the southern portion of Stellwagen Bank and near the Cape Cod Bay shore off North Truro, Mass. A standard New England No. 41 trawl net was used in all operations.

During the first portion of the cruise, attempts were made to photograph sections of the net utilizing a two-man underwater vehicle towed in front of the net. The underwater television camera unit was pivot-mounted on the stern of the vehicle. Views of the cod end and headrope were recorded on film. Due to low water temperatures, the divers' maximum "vehicle time" could not be safely extended beyond nine minutes. In addition, poor visibility made it desirable to terminate vehicle operations for the remainder of the cruise.

Excellent results were attained by lowering the underwater television camera down the towing warps to a position just ahead of the otterboards. A series of trawl-door scenes were film-recorded from the underwater television monitor on board the Delaware, showing the actions of the trawl doors at different towing speeds. Over 3,000 feet of film were taken during these operations.

Operations were conducted to test procedures for sending the television camera down to the area between the trawl doors. By using a bridle attached to each trawl wire, the area forward of the mouth of the net was surveyed by the television camera.

These studies were carried on as a part of a program of research designed to better understand the functioning of the otter-trawl fishing gear.

North Atlantic Fisheries Investigations

INSHORE HADDOCK NURSERY GROUNDS SURVEYED:

M/V "Delaware" Cruise 60-10: The inshore nursery grounds of haddock were surveyed by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware during a July 5-9 cruise. A scientific crew of five, collected information from 32 inshore stations located in the Ipswich Bay area, off Cape Cod, in the Nauset Beach area, and Stellwagen Bank in Massachusetts Bay.

Haddock were taken in each area, but the area off Race Point, Provincetown, the tip of Cape Cod, was found to have the largest concentration of small haddock. These small fish belonging to the 1958 year-class will, in another year, become an important part of the commerical catch. In addition to haddock, 22 other species of fish were taken in varying quantities. Among these were cod, pollock, hake, and dogfish.

North Pacific Exploratory Fishery Program

GOOD TRAWLABLE BOTTOM FOUND OFF STRAIT OF JUAN DE FUCA:

M/V "John N. Cobb" Cruise 46: Commercial quantities of groundfish were found in four separate areas by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb during an 8-week (ended June 24, 1960) exploratory fishing cruise in the bad bottom "spit area" west of Cape Flattery. The first area (see chart) produced principally petrale sole. Each of two 60-minute tows caught 1,200 pounds of this species at depths from 61 to 79 fathoms. Three additional trawl tows in the deeper water of the same area produced moderate catches of rockfish. The area covers approximately 15 square miles.

The second area produced principally dover sole. Two 70-minute tows produced 4,000 and 3,800 pounds of rockfish at depths from 57 to 72 fathoms. The area measures approximately 10 square miles. A 90-minute tow adjacent to that area in 72-80 fathoms took 1,500 pounds of dover sole.

The third area produced principally snappers (rockfish). Catches ranged from approximately 500 pounds to 4,500 pounds per hour in depths from 70 to 80 fathoms. The area is approximately 10 miles long and 2 to to 3 miles wide.

The fourth area located produced excellent catches of Pacific ocean perch. Five tows produced perch at rates from 500 to 4,000

pounds per hour in depths ranging from 75 to 92 fathoms. This was the largest clear area found and measured approximately 10 miles by 6 miles.

Fig. 1 - M/V John N. Cobb Cruise 46 (May-June 1960).

A fifth area of clear dragging bottom was also discovered; however, tows produced only large catches of dogfish. The area measured approximately $2\frac{1}{2}$ by 4 miles and ranged in depth from 75 to 98 fathoms.

The locations of the trawable areas and catches obtained were communicated to the commercial trawling fleet directly. The commercial otter-trawl fleet was quick to take advantage of the discovery of favorable bottom in an area which had previously been considered too rough for bottom trawls. The commercial fleet landed over 300,000 pounds from the petrale sole and dover sole areas before the completion of the cruise by the Bureau's vessel.

The procedure used to survey the area was as follows: (1) Sounding transects, using a high resolution research model echo-sounder, were made approximately two miles apart and at right angles to each other over an area of approximately 100 square miles. The character of the bottom with respect to hardness was plotted during the sounding transects as were the definitely untrawable stretches. (2) The promising sections within the soft bottom areas were then surveyed using a snag cable 280 feet long between standard 8-foot by 4-foot otter doors. (3) On snag cable tows coming clear a standard 400-mesh eastern otter trawl was towed to evaluate the species and magnitude of fish populations present.

A total of 174 stations, including sounding transects, snag cable tows, and otter trawl tows, was made during the cruise.

Biologists from the Washington State Department of Fisheries tagged and released numbers of petrale sole and ling cod--as part of their research program on the commercial groundfish species.

M/V "John N. Cobb" Cruise 47: The Cobb was scheduled to depart on July 18, 1960, for 7 weeks of exploratory bottom trawling off the north end of Vancouver Island (Quatsino Sound to the Scott Islands). The primary

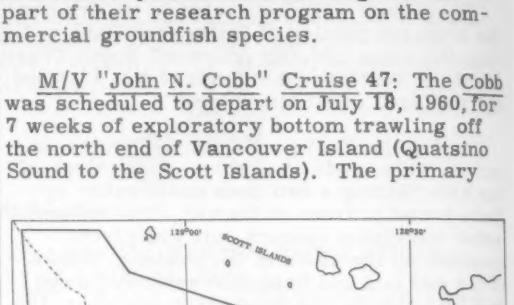


Fig. 2 - M/V John N. Cobb Cruise 47 (July-September 1960).

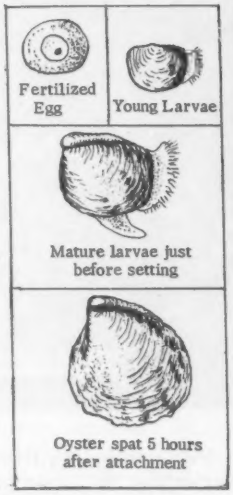
purpose was to evaluate the commercial potential of bottom fish in that area. Records will be maintained on (1) the general topography of the area and (2) oceanographic and meteorological conditions. For the more important commercial species that are encountered, lengths and average weights will be measured. Otoliths ("ear bones") will be removed from English and petrale sole so that their approximate ages can be determined.

Transects using sonic equipment will be made over runs of approximately constant depth. Transects showing trawlable bottom will be surveyed with a standard otter trawl to assess the commercial fishing potential.

Oysters

LONG ISLAND SOUND OBSERVATIONS ON SPAWNING AND SETTING:

The U. S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn., will again conduct systematic observations in Long Island Sound on spawning and setting of oysters and starfish, using the same 10 major stations as in previous years. In addition to the basic stations, at least 12 auxiliary ones will be used, principally in the Milford and New Haven areas. These stations, however, are primarily designed for studies dealing with development of mechanical and chemical methods of control of shellfish enemies.



The bottom water temperature recorded at the stations during the week ending July 9 varied from about 60.0° F. at the deepest stations to about 68.0° F. at the shallow ones. Some oysters have spawned but no larvae have been found in the plankton samples collected on July 5, 1960.

Setting of starfish began on July 1 and young stars were observed on the collectors at most of the stations except two. To date, however, the setting has been light with the heaviest amounting to 9 starfish per 20 shells at one station located in 30 feet of water in the Milford area. (Bulletin No. 1, July 11, 1960.)

The bottom water temperature recorded during the collecting trip on July 18 ranged from 66.0° F. at the deepest stations to 71.0° F. at New Haven Stations #4, #5, and #6. The water was extremely rich in phytoplankton; numerous blooms covering areas of several square miles each were observed. However, oyster larvae were virtually absent in plankton samples. These samples consist of material retained from about 200 gallons of sea water by a #20 net.

No oyster set has been recorded, but setting of starfish is continuing and during July 14 to July 18 it showed a great increase in intensity, especially at Station #3, which is the deep-water station at Milford, and Station #7, a deep-water station in the New Haven area. (Bulletin No. 2, July 20, 1960.)

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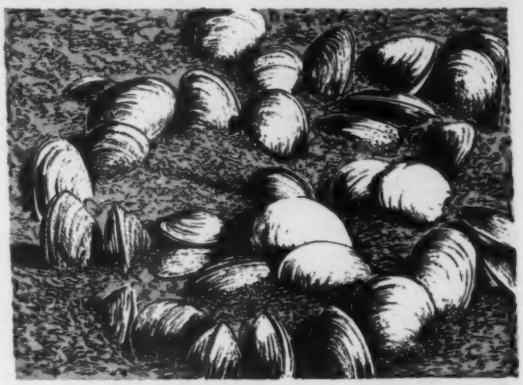
NEW METHOD OF CONTROL FOR COMMON MUSSEL:

A new method for control of the common mussel, a competitor of oysters, has been developed by the U. S. Bureau of Commercial Fisheries, Milford Biological Laboratory. In



The characteristic position of sea mussel. The anterior end buried in the sand and the posterior or syphon end projecting well above the level of the bottom.

preliminary experiments, a 1-percent solution of copper sulfate killed 99.3 percent of the mussels, while an insignificant number of oysters was injured. Further experiments are now in progress, but all observations to date show the same results, i.e. nearly all mussels are killed by the treatment, while few oysters are injured. Several oyster companies, which have beds that are now heavily populated with mussels, plan to use the method this summer. The copper sulphate method is much cheaper and more effective than Victoria Blue. The latter, however, is still very useful in combatting other competitors, such as tunicates.

Scallops

AUGUST SCALLOP FESTIVAL AND PUBLICITY CAMPAIGN:

Commercial fishing and allied food trade industries cooperated in the publicity for the "New Bedford Scallop Festival" in August 1960. Because of the large stocks and low prices, the U. S. Bureau of Commercial Fisheries cooperated with the New England scallop industry in its effort to move scallops

into trade channels. At the request of the Bureau, the U. S. Department of Agriculture listed scallops on the List of Foods in Plentiful Supply for August and publicized scallops in the material it distributes to the food trade and food service industries.

To help the scallop industry market its product, the Bureau's other efforts included:

Press Release and Special Marketing Bulletin consisting of story and three scallop recipes, for distribution to the Bureau's mailing list of some 2,300 food editors, nutritionists, dietitians, and others in the food and allied industries.

For use by restaurants, 25,000 Fisheries Marketing Bulletins featuring scallop recipes for 25, 50, and 100 portions for distribution to the major regional, state, and local restraunt associations in the United States, and by the Bureau's field staff.

For use by institutions, 33,000 Fisheries Marketing Bulletins prepared in cooperation with Sun-Kist, featuring scallops and lemons for distribution through the Sun-Kist nationwide mailing list, and by the Bureau's field staff.

For food editors, nutritionists, dietitians, and others in the food and allied industries, 7,000 fisheries marketing bulletins prepared in cooperation with Sun-Kist featuring lemons and scallops for distribution through the Sun-Kist nationwide mailing list and the Bureau's field staff.

In an effort to enlist the support of the important allied food trade industries, a telegram, signed by Ross Leffler, Assistant Secretary for Fish and Wildlife, Department of the Interior, was sent to over 40 trade organizations.

To carry this promotion into the fall selling months a special flyer for School Lunch

and the institutional trade was prepared for use during Fish 'n Seafood Parade in October. In addition scallops are featured in a Special Fishery Marketing Bulletin for food editors, nutritionists, dietitians, and others in the food and allied industries.

Supplementing the printed material, the Bureau's Home Economists featured scallops in their demonstrations before school-lunch personnel, dietitians, restaurant operators, chefs, extension agents and others.

Marine Park overlooking beautiful Buzzard's Bay in New Bedford, was the scene of the 3rd Annual Scallop Festival, August 12, 13, and 14, 1960. Based on the popularity of last year's Festival, approximately 20,000 people from all parts of the country were present to sample this seafood.

* * * * *

SHUCKING METHOD DEVELOPED:

Before the calico scallop beds discovered off the Florida coast by the U. S. Bureau of Commercial Fisheries' chartered fishing vessel Silver Bay could be exploited, an economical means of shucking the small scallops needed to be developed. The Bureau's Technology Laboratory at Pascagoula, Miss., has come up with a simple shucking method which may adequately cover this need. The scallops are placed in warm water, which relaxes the shellfish, and then the shell is split. The viscera are pulled out by a vacuum pump, leaving the "eye muscle" to be cut by the workers. It appears that this method is fast and economical.

Note: Also see Commercial Fisheries Review, Mar. 1960 p. 26.

Shrimp

ALASKA CANNED PRODUCT YIELD INCREASED:

How to increase the product yield in Alaska canned shrimp was revealed by recent studies at the Ketchiakan, Alaska, Bureau of Commercial Fisheries Technological Laboratory. Hitherto automatic removal of the shells of Alaska shrimp required that the shrimp be held in ice or in refrigerated sea water for two days to facilitate release of the shrimp meats from the shells. Studies on the holding process indicated that the product yield decreased by 13 percent during the two-day holding period and that a further 2-percent loss in yield occurred for each additional day of holding beyond the two-day minimum.

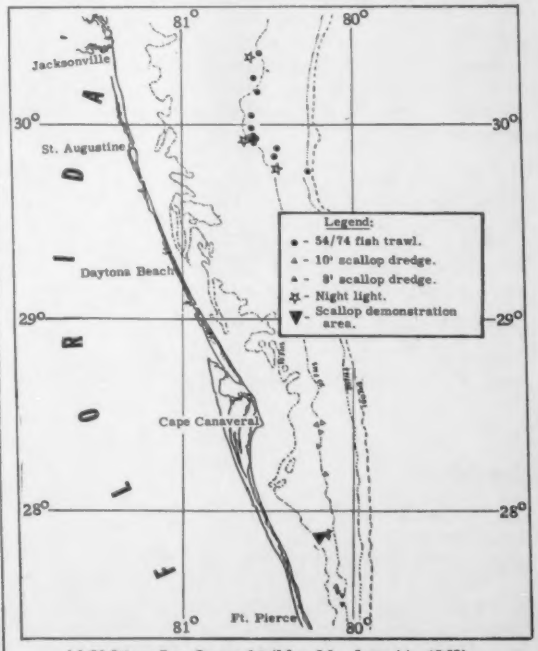
Preliminary processing studies have indicated that briefly immersing the shrimp immediately after receipt in a very weak acidic solution may permit automatic shell removal without the customary waiting period.

Successful completion of these studies will markedly improve product yield in Alaska canned shrimp and probably also improve the product quality.

South Atlantic Exploratory Fishery Program

COMMERCIAL SCALLOP DREDGE DEMONSTRATED TO FISHERMEN:

M/V "Silver Bay" Cruise 24: During May 26 to June 14, the U. S. Bureau of Commercial Fisheries' chartered fishing vessel Silver Bay returned to the Florida east coast



M/V Silver Bay Cruise 24 (May 26 - June 14, 1960).

for follow-up operations in the recently-discovered calico exploratory trawling for red snapper.

Because of extensive interest shown by the industry, daily trips were scheduled out of Fort Pierce for the purpose of demonstrating scallop fishing gear and methods and to provide samples for processing tests. From May 30 to June 5, 86 observers participated in the fishing demonstrations, which were conducted in a limited buoyed area (27°53' N.-80°09' W.), approximately 9 miles north of Bethel Shoals buoy. At this location, 25 drags with a single 8-foot modified New England-type scallop dredge produced 285 bushels of live scallops in 11.8 hours of fishing.

Limited exploration for red snapper (Lutianus aya) with a 54'/74' roller-rigged, 2 seam, 4½" mesh nylon fish trawl, between Daytona and Jacksonville, resulted in the location of suitable trawling bottom and small catches of red snapper.

Catches of mixed fish, up to 1,595 pounds per 90-minute tow, consisted predominantly of triggerfish (Balistes), grunts (Bathystoma), angelfish (Angelichthys), porgies (Pagrus and Stenotomus), and vermillion snappers (Rhomboplites). Food fish captured included 63 pounds of red snappers, 82 pounds of lane snappers (L. synagris), large (11"-14") vermillion snappers, dog snappers (L. jocu), hogfish (Lachnolaimus maximus), and 334 pounds of porgies.

Approximately 60 large surface schools of fish, tentatively identified as thread herring (Opisthonema), scad (Decapterus), and menhaden (Brevoortia), were observed in the vicinity of Bethel Shoal (27°44' N-80°10' W.) on May 30. Numerous little tuna (Euthynnus alletteratus), dolphin (Coryphaena), and king mackerel (Scomberomorus cavalla) were taken on trolling gear in this area.

Note: Also see Commercial Fisheries Review, July 1960, p. 41.

Standards

MEETINGS HELD ON PROPOSED QUALITY STANDARDS FOR FROZEN OCEAN PERCH FILLETS:

The U. S. Bureau of Commercial Fisheries announced on July 13, 1960, public meetings to discuss standards for frozen ocean perch and Pacific ocean perch fillets.

Developed by the Bureau at its new Gloucester, Mass., Technological Laboratory and the Seattle, Wash., Laboratory, this standard is another step in a continuing joint effort by Government and industry to improve the quality of fishery products. Similar quality standards are already in use for eight other frozen sea foods--fish sticks, fish blocks, salmon and halibut steaks, cod and haddock fillets, raw breaded fish portions, and shrimp.

The meetings were held in Gloucester, Chicago, and Seattle.

United States Fishing Fleet 1/ Additions

APRIL 1960:

A total of 24 vessels of 5 net tons and over were issued first documents as fishing craft during April 1960--a decrease of 21 vessels as compared with the same month in 1959. The Pacific area continued to lead with 14 vessels. The remaining 10 vessels were issued first documents in the Chesapeake, Gulf, New England, and South Atlantic areas.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, April 1960

Area	April		Jan.-April		Total
	1960	1959	1960	1959	1959
	(Number)				
New England	2	1	5	6	15
Middle Atlantic	-	-	5	3	12
Chesapeake	4	9	13	30	106
South Atlantic	1	5	15	23	76
Gulf	3	15	16	40	135
Pacific	14	13	32	21	97
Great Lakes	-	-	3	3	6
Alaska	-	-	1	4	32
Total	24	45	90	130	479

Note: Vessels assigned to the various areas on the basis of their home ports.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft by Tonnage, April 1960

Net Tons	Number
5 to 9	15
10 to 19	7
40 to 49	1
310 to 319	1
Total	24

During the first four months of 1960, a total of 90 vessels were issued first documents as fishing craft--40 below the same period of 1959. Most of the decline occurred in the Gulf area with a drop of 24 vessels as compared with the 1959 four-months period.

* * * * *

MAY 1960:

A total of 63 vessels, of 5 net tons and over, were issued first documents as fishing

1/ Includes both commercial and sport fishing craft.

craft during May 1960--18 above May 1959. The Alaska area represented the greatest

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, May 1960

Area	May		Jan.-May		Total
	1960	1959	1960	1959	1959
	(Number)				
New England	1	1	6	7	15
Middle Atlantic	3	-	8	3	12
Chesapeake	10	4	23	34	106
South Atlantic	5	8	20	31	76
Gulf	11	11	27	51	135
Pacific	19	18	51	39	97
Great Lakes	1	-	4	3	6
Alaska	13	3	14	7	32
Total	63	45	153	175	479

Note: Vessels assigned to the various areas on the basis of their home ports.

increase with a gain of 10 vessels as compared with the same month of 1959, followed by the Chesapeake area with a gain of 6 vessels.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft by Tonnage, May 1960

Net Tons	Number
5 to 9	38
10 to 19	10
20 to 29	7
30 to 39	1
140 to 149	1
150 to 159	2
320 to 359	4
Total	63

During the first five months of 1960, a total of 153 vessels were issued first documents as fishing craft--a drop of 22, compared with the 1959 five-months period. The Pacific area with 51 vessels made up one-third of the total vessels documented--12 above the same period of 1959.

United States Fishery Landings, January-June 1960

Landings of fish and shellfish in the United States during the first half of 1960 dropped 11 percent as compared with the same period of 1959--from 1.6 billion pounds in 1959 to 1.4 billion pounds in 1960.

The greatest decline was for menhaden--156 million pounds less in 1960 than in the first half of 1959. Menhaden landings on the Atlantic Coast dropped sharply and only a slight increase was reported in the Gulf States. During January-June 1960, herring landings in Alaska were down about 18 million pounds and industrial fish landings in Maine and Massachusetts were down about 30 million pounds as compared with the first half of 1959.

On the Pacific Coast, landings of salmon in Alaska for the first seven months this

Table 1 - United States Fishery Landings of Certain Species for Periods Shown, 1960 and 1959 1/

Species	Period	1960	1959	Total 1959
		(1,000 Lbs.)		
Anchovies, Calif.	6 mos.	1,600	1,800	7,173
Cod:				
Maine	4 mos.	1,000	833	2,694
Boston	6 "	8,400	9,171	17,709
Gloucester	6 "	1,800	1,607	3,233
Total cod		11,200	11,611	23,636
Haddock:				
Maine	4 mos.	1,200	1,272	3,405
Boston	6 "	38,700	40,480	72,378
Gloucester	6 "	8,800	9,404	12,103
Total haddock		48,700	51,156	87,886
Halibut 2/:				
Alaska	6 mos.	14,300	13,640	17,908
Wash. and Oreg.	6 "	10,600	11,424	22,537
Total halibut		24,900	25,064	40,445
Herring, Alaska	6 mos.	23,500	41,000	107,444
Industrial fish, Me. & Mass. 3/	6 "	14,700	44,525	103,312
Mackerel:				
Jack	6 mos.	38,000	15,322	37,484
Pacific	6 "	9,200	6,136	37,597
Menhaden	6 "	531,200	687,100	2,193,866
Ocean perch:				
Maine	4 mos.	17,100	19,656	75,225
Boston	6 "	400	1,756	3,280
Gloucester	6 "	32,000	25,814	58,197
Total ocean perch		49,500	47,226	136,702
Salmon:				
Alaska	7 mos.	160,000	105,000	147,278
Washington	4 "	200	391	41,800
Oregon	5 "	800	999	5,027
Scallops, sea (meats), New Bedford	6 "	8,900	8,100	18,814
Shrimp (heads-on):				
South Atlantic & Gulf States	6 mos.	61,800	59,660	220,074
Wash.	4 "	300	400	2,992
Oregon	5 "	100	1,505	2,781
Squid, Calif.	6 "	300	14,918	19,653
Tuna, Calif.	to July 23	168,100	165,300	254,775
Whiting:				
Maine	4 mos.	400	-	23,339
Boston	6 "	57	72	687
Gloucester	6 "	14,200	18,318	61,797
Total whiting		14,657	18,390	85,823
Total all above items		1,167,657	1,305,603	3,574,562
Others (not listed)		271,443	303,092	1,525,438
Grand total		1,439,100	1,608,695	5,100,000

1/Preliminary. 2/Dressed weight. 3/Excluding menhaden.

year were 55 million pounds greater than in the same period of 1959. Jack mackerel landings during the first half of 1960 were up 23 million pounds and Pacific mackerel 3 million pounds.

Table 2 - United States Fishery Landings by States for Periods Shown, 1960 and 1959 1/

Area	Period	1960	1959	Total 1959
		.....(1,000 lbs.).....		
Maine	4 mos.	26,000	28,024	265,959
Massachusetts 2/:				
Boston	6 mos.	55,500	60,088	113,257
Gloucester.....	6 "	68,200	76,741	228,723
New Bedford ...	6 "	40,700	56,228	107,961
Provincetown ..	6 "	9,400	8,603	27,700
Total Mass. ...		173,800	201,660	477,641
Rhode Island 3/...	5 mos.	14,100	45,800	100,591
New York 3/.....	6 "	23,000	20,300	38,656
New Jersey 3/ ...	6 "	34,300	28,777	56,929
Maryland 3/.....	6 "	23,100	27,413	60,500
North Carolina 3/ .	6 "	27,900	32,026	62,724
South Carolina 3/ .	6 "	5,600	4,200	18,654
Georgia	6 "	8,900	7,001	21,513
Florida 3/	5 "	62,100	59,365	142,860
Alabama	4 "	2,400	2,512	14,022
Mississippi 3/ ...	4 "	3,300	2,500	80,944
Louisiana 3/	1 "	5,000	3,039	99,963
Texas 3/	5 "	13,300	10,731	82,715
Ohio	6 "	9,900	11,132	18,586
Alaska:				
Halibut 4/.....	6 "	14,300	13,640	17,908
Herring	6 "	23,500	41,000	107,444
Salmon	7 "	160,000	105,000	147,278
Washington 2/ ...	4 "	20,000	30,234	157,920
Oregon 2/	5 "	16,200	14,822	52,377
California:				
Certain species 5/	6 mos.	217,200	203,476	356,682
Other	4 "	26,100	29,496	155,519
Total Calif. ...		243,300	232,972	512,201
Hawaii	3 mos.	1,600	1,647	16,570
Rhode Island, Middle Atlantic, Chesapeake, South Atlantic, and Gulf States (menhaden only) ..	6 mos.	527,200	684,900	2,158,423
Total all above		1,439,100	1,608,695	4,712,378
Others not listed		6/	6/	387,622
Grand total		6/	6/	5,100,000

1/ Preliminary.
2/ Landed weight.
3/ Excludes menhaden.
4/ Dressed weight.
5/ Includes catch of anchovies, jack and Pacific mackerel, squid, and tuna. Data on tuna are through July 23.
6/ Data not available.
Note: Data principally represent weight of fish and shellfish as landed except for mollusks which represent the weight of meats only.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, MAY 1960:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during May 1960 increased by 8.8 percent in quantity and 14.6 percent in value as compared with April 1960. The increase was due primarily to higher imports of frozen tuna other than albacore (up 6.6 million pounds) and to an increase of about 2.2 million pounds each in the imports of shrimp, lobster and spiny lobster, and fillets other than groundfish. The increase was partly offset by a 4.3-million pound decrease in the imports of groundfish fillets.

United States Imports and Exports of Edible Fishery Porducts, May 1960 with Comparisons

Item	QUANTITY			VALUE		
	May		Year	May		Year
	1960	1959	1959	1960	1959	1959
	. (Million of Lbs.) .			. . (Millions of $) .		
Imports:						
Fish & Shellfish:						
Fresh, frozen, & processed 1/. . .	81.7	82.5	1,070.5	25.9	25.8	309.6
Exports:						
Fish & Shellfish:						
Processed only 1/ (excluding fresh & frozen)	1.8	5.2	68.0	0.6	1.2	22.8

1/ Includes pastes, sauces, clam chowder and juice, and other specialties.

Compared with May 1959, the imports in May this year were lower by 1.0 percent in quantity and 0.4 percent in value due mainly to lower imports of groundfish fillets (down 6.2 million pounds). Compensating, in part, for the decreases was an increase of about 5.2 million pounds in the imports of frozen albacore and other tuna.

United States exports of processed fish and shellfish in May 1960 were lower by 49.0 percent in quantity and 53.8 percent in value as compared with April 1960. Compared with the same month in 1959, the exports this May were lower by 65.7 percent in quantity and 50.0 percent in value. The lower exports in May this year as compared with the same month in 1959 were due mainly to sharply lower exports of canned California sardines and squid.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1960 at the 12½-percent rate of duty is 53,448,330 pounds. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Imports from January 1-July 2, 1960, amounted to 22,698,066 pounds, according to data compiled by the Bureau of Customs. From January 1-July 4, 1959, a total of 21,992,914 pounds had been imported.

U. S. Production of Fish Sticks and Portions, April-June 1960

United States production of fish sticks in the second quarter of 1960 was 12.8 million pounds and fish portions 10.4 million pounds. This was a drop of 7 percent in fish sticks but a gain of 21 percent in portions as compared with the same quarter of 1959. Most of the decline in fish sticks occurred in the cooked sticks (down almost 1.0 million pounds). The increase in portions was attributed to a greater production of raw breaded portions (up 1.5 million pounds), while the unbreaded portions dropped to slightly over one-half the amount produced during the same period of last year. Cooked breaded portions production was up 600,000 pounds.

Table 1 - U. S. Production of Fish Sticks by Months, April-June 1960[1/]

Month	Cooked	Raw	Total
	(1,000 Lbs.)		
April	4,474	373	4,847
May	3,366	278	3,644
June	3,988	278	4,266
Total 2nd quarter 1960	11,828	929	12,757
Total 2nd quarter 1959	12,710	971	13,681
Total first 6 months 1960	30,425	2,186	32,611
Total first 6 months 1959	29,343	2,537	31,880

1/ Preliminary.

Table 2 - U. S. Production of Fish Sticks by Areas, April-June 1959 and 1960

Area	1960[1/]		1959[2/]	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	22	10,288	22	11,797
Inland and Gulf States	4	1,350	5	994
Pacific Coast States	7	1,119	9	890
Total	33	12,757	36	13,681

1/Preliminary.
2/Revised.

Table 3 - U. S. Production of Fish Sticks by Months, 1959-1960

Month	1960[1/]	1959[2/]	1958[2/]	1957	1956
			(1,000 Lbs.)		
January	5,496	6,265	5,471	4,261	4,862
February	6,528	6,340	5,925	5,246	5,323
March	7,830	5,594	5,526	5,147	6,082
April	4,847	4,708	4,855	4,492	3,771
May	3,644	4,398	4,229	3,380	3,873
June	4,266	4,575	4,702	3,522	3,580
July		3,783	4,574	3,821	3,153
August		3,872	4,358	4,643	4,166
September		5,343	5,328	4,861	4,085
October		5,831	5,485	5,162	5,063
November		4,822	5,091	4,579	4,585
December		4,734	5,467	4,014	4,019
Total		60,265	61,011	53,128	52,562

1/Preliminary.
2/Revised.

Cooked fish sticks (11.8 million pounds) made up 93 percent of the fish stick total. The remaining 7 percent consisted of raw fish sticks. A total of 10.0 million pounds of breaded fish portions (of which 8.4 million pounds were raw) and 416,000 pounds of unbreaded portions was processed during the second quarter of 1960.

Table 4 - U. S. Production of Fish Portions by Months and Type, April-June 1960[1/]

Month	Breaded			Unbreaded	Total
	Cooked	Raw	Total		
			(1,000 Lbs.)		
April	697	2,506	3,203	167	3,370
May	519	2,509	3,028	100	3,128
June	335	3,412	3,747	149	3,896
Total 2nd quarter 1960	1,551	8,427	9,978	416	10,394
Total 2nd quarter 1959	950	6,911	7,861	704	8,565
Total first 6 months 1960	3,440	17,842	21,282	808	22,090
Total first 6 months 1959	2,627	13,514	16,414	1,366	17,507

1/Preliminary.

Table 5 - U. S. Production of Fish Portions by Areas, April-June 1959 and 1960

Area	1960[1/]		1959[2/]	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	20	5,042	21	4,071
Inland and Gulf States	6	5,011	8	4,192
Pacific Coast States	6	341	4	302
Total	32	10,394	33	8,565

1/Preliminary.
2/Revised.

The Atlantic Coast was the principal area for the production of fish sticks and portions--15.3 million pounds. The remaining 7.9 million pounds of fish sticks and portions were packed in the inland, Gulf, and Pacific Coast states.

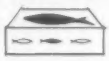
During the first six months of 1960, a total of 32.6 million pounds of fish sticks was pro-

Table 6 - U. S. Production of Fish Portions by Months, 1958-1960

Month	1960[1/]	1959[2/]	1958
	(1,000 Lbs.)		
January	3,623	2,692	1,973
February	3,454	3,025	1,254
March	4,619	3,225	1,471
April	3,370	2,634	2,268
May	3,128	2,684	1,478
June	3,896	3,247	1,504
July		2,227	2,161
August		2,796	1,516
September		3,558	1,566
October		4,314	2,560
November		3,483	1,979
December		3,262	2,060
Total		37,147	21,790

1/Preliminary.
2/Revised.

duced--an increase of 2 percent as compared with the corresponding period of 1959; fish portions (22.1 million pounds) production was up 26 percent.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MAY 1960:

Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 2.1 million pounds (value $1.1 million) of fresh and frozen fishery products were purchased in May 1960 by the Military Subsistense Supply Agency. This exceeded the quantity purchased in April by 29.3 percent and was 6.6 percent over the amount purchased in May 1959. The value of the purchases in May 1960 was up 15.1 percent as compared with April and 6.6 percent more than for May 1959.

During the first five months of 1960 purchases totaled 9.0 million pounds (valued at $4.8 million)--an increase of 1.2 percent in quantity and 0.5 percent in value as compared with the same period in 1959.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, May 1960 with Comparisons

Quantity				Value			
May		Jan.-May		May		Jan.-May	
1960	1959	1960	1959	1960	1959	1960	1959
(1,000 Lbs.)				($1,000)			
2,128	1,997	9,022	9,134	1,103	1,035	4,791	4,817

Prices paid for fresh and frozen fishery products by the Department of Defense in May 1960 averaged 51.8 cents a pound, about 6.4 cents less than the 58.2 cents paid in April but exactly the same as paid in May last year.

Canned Fishery Products: Very small amounts of canned fishery products were purchased for the use of the Armed Forces during May this year. In the first five months of 1960, purchases of canned tuna, salmon, and sardines were substantially lower than in the same period in 1959.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, May 1960 with Comparisons

Product	Quantity				Value			
	May		Jan.-May		May		Jan.-May	
	1960	1959	1960	1959	1960	1959	1960	1959
	(1,000 Lbs.)				($1,000)			
Tuna	1	424	1,283	1,832	1/	210	581	868
Salmon	-	7	-	7	-	5	-	5
Sardines	1	229	62	509	1/	26	26	72

1/Less than $1,000.

Wholesale Prices, July 1960

The wholesale price index for edible fishery products (fresh, frozen, and canned) for July 1960 at 129.9 percent of the 1947-49 average was up 2.7 percent from the preceding month. The increase was the result of higher ex-vessel prices for haddock at Boston and higher wholesale prices for fresh and frozen haddock fillets, Pacific Coast salmon, and western halibut. Compared with July 1959, the fishery products wholesale price index this July was up 5.6 percent principally because of higher prices for fresh and frozen shrimp, fresh salmon, fresh haddock fillets, and canned fish.

The index for the drawn, dressed, and whole finfish subgroup this July was sharply higher (10.3 percent) as compared with the preceding month and also higher by 3.1 percent from July a year ago. Responsible for the increase from June to July were higher prices for large drawn haddock (up 54.9 percent), fresh Pacific salmon (up 4.6 percent), fresh Pacific halibut (up 2.4 percent), Lake Superior drawn whitefish (up 10.5 percent), and yellow pike (up 1.5 percent). A drop of 18.2 percent in the price of Great Lakes round whitefish offset the increases to some extent. The July 1960 subgroup prices were higher than in the same month of 1959 because of the sharp increase in Pacific salmon prices (up 15.6 percent) and smaller increases for fresh halibut and Lake Superior whitefish, offset somewhat by lower wholesale prices for large haddock at Boston and Great Lakes round whitefish and yellow pike at New York.

The fresh processed fish and shellfish subgroup index this July increased slightly (0.8 percent) from the preceding month. A 23.0-percent increase in the wholesale price for fresh small haddock fillets was almost completely offset by a 3.1-percent decline for fresh shrimp at New York City. Shrimp prices seasonally drop in the summer and fall months. The July 1960 subgroup wholesale price index was higher by about 18.7 percent from July a year ago due to sharply higher prices for all the subgroup items.

This July the wholesale price index for the frozen processed fish and shellfish subgroup declined slightly (0.5 percent) from a month earlier. An increase of about 2 cents a pound in the frozen haddock fillet price from the abnormally low level of the past few months failed to offset fractionally lower prices for frozen ocean perch and flounder fillets and shrimp. From July a year ago to this July, the subgroup

price index was down 2.6 percent due primarily to lower prices for frozen haddock fillets (down 19.4 percent) and other fillets. The decreases were partially offset by a 2.6-percent increase in frozen shrimp prices at Chicago.

There was no movement in the canned fish primary price index, but it still was up 4.3 percent from July 1959. All canned fish items were higher this July as compared with the same month of 1959. In July 1959 the fish canneries were active packing salmon, mackerel, Maine sardines, and California tuna. Although the reported July prices for cannd tuna at the packers' level were about unchanged from recent months, heavy stocks of both domestic and imported canned tuna resulted in reductions in the form of promotional or advertising and other allowances. The excellent July pack of Bristol Bay canned sockeye or red salmon was offset by a poor pack of the less expensive pink salmon and other types of salmon in other areas. After a poor start in June, the Maine sardine canned pack picked up and at the end of July was at about the same level as for the same period a year ago.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, July 1960 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1947-49=100)			
			July 1960	June 1960	July 1960	June 1960	May 1960	July 1959
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					129.9	126.5	126.6	123.0
Fresh & Frozen Fishery Products:					147.7	142.0	142.2	139.0
Drawn, Dressed, or Whole Finfish:					165.1	149.7	150.1	160.2
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.14	.09	136.8	88.3	94.1	169.5
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.34	.34	106.2	103.7	93.5	103.6
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.84	198.0	189.3	184.8	171.3
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.63	.57	156.2	141.3	183.4	151.2
Whitefish, L. Erie pound or gill net, rnd., fres	New York	lb.	.68	.83	136.6	166.9	212.5	159.8
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.68	.67	158.3	155.9	170.0	190.0
Processed, Fresh (Fish & Shellfish):					146.0	144.8	145.8	123.0
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.46	.37	154.8	125.9	91.9	139.5
Shrimp, lge. (26-30 count), headless, fresh.	New York	lb.	.79	.82	124.8	128.8	135.1	104.3
Oysters, shucked, standards	Norfolk	gal.	7.00	6.88	173.2	170.1	170.1	145.4
Processed, Frozen (Fish & Shellfish):					117.8	118.4	117.7	120.9
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	100.8	102.1	98.1	102.1
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.27	.25	84.8	78.5	80.1	105.2
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.27	.28	106.7	110.8	112.8	112.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.79	.80	121.5	123.8	123.5	118.4
Canned Fishery Products:					104.8	104.8	104.8	100.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	24.50	24.50	127.8	127.8	127.8	122.6
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.10	11.10	80.0	80.0	80.0	77.9
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	8.00	8.00	93.9	93.9	93.9	85.1
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.75	93.1	93.1	93.1	87.8

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

PROCESSING WHALE LIVERS TO PREVENT LOSS OF VITAMIN A

In a whale factoryship fitted out in East Germany on Russian account, special equipment for the treatment of whale livers was included. The liver oils are recovered by a special solvent extraction process in order to prevent loss of vitamin A. The livers are reduced in mincers and produced in the form of flakes in a coagulating chamber. They are then dried under vacuum to reduce the moisture content. The dried livers are extracted by a batch process with trichlorethylene which is recovered from the oils by distillation. The solvent-free oil is stored in drums for further processing. The residue is dried into a meal (World Fishing, November 1956).

International

EASTERN GULF OF MEXICO SHRIMP CONSERVATION COMMISSION

FIRST MEETING HELD IN CUBA:

The United States-Cuba Commission for the Conservation of Shrimp in the Eastern Gulf of Mexico held its first meeting at Havana, Cuba, from June 30 to July 1, 1960. Donald L. McKernan, Director of the U. S. Bureau of Commercial Fisheries, was elected chairman and Dra. Isabel Perez Farfante of Cuba was elected vice chairman.

The Commission agreed upon a coordinated research program that would meet its obligation under the Convention to maintain the maximum sustainable productivity of stocks of shrimp of common concern to Cuba and the United States in waters of the Gulf of Mexico off the coast of Cuba and the Florida coast of the United States. The scientific program is designed to provide information required for:

1. Identification of the stocks of common concern and the area they occupy.

2. Determination of the necessity for any conservation measures to assure the maximum sustainable yield, taking into account particularly the growth and death rates of shrimp in the area, the effect of the fishery on the stock, and the type of measure which would be most effective.

3. Determination of the effect of environment on the stocks.

It is expected that the program of the Commission will be inaugurated in the near future.

The next annual meeting of the Commission will be held in April 1961 at a place to be later determined.

Note: Also see Commercial Fisheries Review, May 1960, p. 45.

EUROPEAN ECONOMIC COMMUNITY

TARIFFS ON FISHERY PRODUCTS ANNOUNCED:

The European Economic Community (Common Market) recently announced its Common Customs Tariff. This common external tariff schedule is to supplant the individual national import tariffs of the six member-countries (the Netherlands, Belgium, Luxembourg, West Germany, France, and Italy). The tariff treatment proposed for fishery products is of particular concern because of the effect the changes in import treatment may have upon international trade in fish and fish products.

The duty rates proposed to be applied to imports of fishery products into the Common Market area are shown in the table. Duties on most fresh, frozen, or cured fish and shellfish will range between 10 and 20 percent ad valorem. Duties on most canned fish and shellfish range from 20 to 30 percent. Few items are less than 10 percent, or duty free. In addition to the common external tariff, special provisions for import control--the details of which are yet undetermined--will apply to fishery products.

Under the Treaty of Rome of March 27, 1957, the six Common Market countries agreed to establish a complete economic union. The treaty provides, among other things, for the gradual elimination of all tariffs and quotas on trade among the six countries and for the establishment of a single common import tariff on products from outside the area. This will impose common commercial policies; trade treaties with other countries will be negotiated by the Community as a unit.

Within the Common Market, customs duties and quantitative import restrictions on fishery products are to be gradually reduced and finally abolished over a period of not more than 12 years. The first reduction of duties was made on January 1, 1959, amounting to 10 percent of the national tariff rates in force on January 1, 1957. Any reductions in customs duties that were above the common tariff were extended to other countries. A second cut, of 20 percent, was made on July 1, 1960. Also, bilateral import quotas are to be opened to all members and increased by 20 percent each year.

During the transitional period, any member country may, on certain conditions, apply minimum prices below which imports are to be temporarily suspended or reduced. A council of Ministers will determine objective criteria for the establishment of minimum price systems. Other special provisions allow for establishment of long-term contracts and for use of compensatory levies on imports.

By the end of the transitional period, a common fishery policy will be established. The general rules of competition provided for by the Rome Treaty are not automatically applicable to fisheries. Special rules may be determined by the Council. To achieve aims of a common policy, the Community may adopt a basis for organization of fish marketing, set rules of competition, and coordinate national market organizations in their effort to unify markets, prices, and support policies. The outcome will depend upon the policies followed by the Council in working out the details. Arrangements for implementing these provisions have not yet been worked out by the Council.

The common external tariff was generally derived from a simple arithmetic average of national duty rates but the customs duties for most fish products were negotiated by special agreement among the six countries. For example, the proposed common external duty for canned sardines is 25 percent ad valorem. Present rates in effect are 15 percent in the Benelux countries (Belgium, the Netherlands, and Lux-

International (Contd.):

embourg), 31.5 percent in France, 14 percent in West Germany, and 27 percent in Italy. Rates in effect for fresh and frozen fillets of sea fish are free in Benelux countries, 35 percent in France, 5 percent in West Germany, and 20 percent in Italy. The proposed external tariff is 18 percent. During the transition period, the rates of duty for the Benelux and West Germany must be raised, and those for France and Italy reduced.

Many of the present duties of the member countries are subject to concessions made in previous trade agreement negotiations. Changes in these duties to the common external tariff will require renegotiation of concessions. Beginning in early September 1960, the United States and other members of the General Agreement on Tariff and Trade (GATT)will meet in Geneva to confer with the Common Market, under provisions of Article XXIV, paragraph 6. This section, although noting that weight should be given to decreases in duties which may be made in arriving at a common external tariff, provides for the granting of compensatory tariff concessions by the customs union to offset increases in rates previously negotiated by its members. Furthermore, it is still undetermined which, if any, of the duty rates in the common external tariff will be considered "bound." Such items would require compensation to other countries if the Common Market should decide to raise the duties.

Exceptions to the common external tariff have been requested by several member countries. Italy has requested duty-free quotas for fresh or frozen tuna and for stockfish and klipfish. Several, including West Germany, have asked for duty-free quotas on herring and fresh and frozen fish (except fillets). The extent of these exceptions to the common tariff is not yet known.

In January 1961, the members of GATT, including the Common Market, will negotiate new tariff concessions. These negotiations may result in further reductions in the external tariff of the Common Market.

Duties for Selected Fishery Products in Common Customs Tariff of the European Economic Community

Tariff Heading Nos.	Description of Goods	Ad valorem Duty Rates
02.04C	Other meat and edible meat offals, fresh, chilled or frozen (marine mammals)	19%
02.06C	Other meat and edible meat offals, salted, dried, or smoked (marine mammals)	24%
03.01	Fish, fresh, chilled, or frozen:	
	A. Fresh-water:	
	I. Trout and other salmonidae	16%
	II. Other	10%
	B. Salt-water:	
	I. Whole, headless or in pieces:	
	a. Herrings, sprats and mackerel:	
	1. From Feb. 15 to June 15	Free
	2. From June 16 to Feb. 14	20%
	b. Tunny and sardines	25%
	c. Other	15%
	II. Fillets	18%
	C. Livers and roes	14%
03.02	Fish, salted, in brine, dried or smoked:	
	A. Salted, in brine or dried:	
	I. Whole, headless or in pieces:	
	a. Herrings and pilchards	12%
	b. Cod, including stockfish and klipfish	13%
	c. Sardines and other	15%
	II. Fillets:	
	a. Of cod, including stockfish and klipfish	20%
	b. Other	18%
	B. Smoked	16%
	C. Liver, roes; fish meal	15%
03.03	Crustaceans and molluscs, whether in shell or not, fresh (live or dead), chilled, frozen, salted, in brine or dried; crustaceans, in shell, simply boiled in water:	
	A. Crustaceans:	
	I. Spiny lobsters and lobsters	25%
	II. Crabs, shrimps and crayfish	18%
	III. Other (Norway lobsters, etc.)	14%
	B. Molluscs:	
	I. Oysters:	
	a. European or flat oysters (Ostrea edulis), weighing not more than 40 grams each	Free
	b. Other	18%
	II. Mussels	10%
	III. Other	8%
05.05	Fish waste	Free
05.11	Tortoise-shell (shells and scales), unworked or simply prepared but not cut to shape; claws and waste of tortoise-shell	Free
05.12	Coral and similar substances, unworked or simply prepared but not otherwise worked; shells, unworked or simply prepared but not cut to shape; powder and waste of shells	Free
05.13	Natural sponges:	
	A. Raw	Free
	B. Other	8%
05.14	Ambergris, castoreum, civet and musk; cantharides; bile, whether or not dried; animal products, fresh, chilled or frozen, or otherwise provisionally preserved, of a kind used in the preparation of pharmaceutical products	Free
05.15	Animal products not elsewhere specified or included; dead animals of Chapter 1 or Chapter 3, unfit for human consumption:	
	A. Fish of a length of 6 cm. or less and shrimps, dried	5%
	B. Other	Free
13.03	C. I. Agar-agar	4%
	III. Other (thickeners extracted from vegetable materials)	Free
15.04	Fats and oils, of fish and marine mammals, whether or not refined:	
	A. Fish liver oils:	
	I. Of halibut	Free
	II. Other	8%
	B. Fish fats and oils, other than fish liver oils	Free
	C. Marine mammal fats and oils:	
	I. Whale oil	2%
	II. Other	Free
15.08	Animal and vegetable oils, boiled, oxidized, dehydrated, sulphurized, blown or polymerized by heat in vaccum or in inert gas, or otherwise modified	15%
15.10	Fatty acids; acid oils from refining; fatty alcohols:	
	A. Stearic acid	12%
	B. Oleic Acid	10%
	C. Other fatty acids; acid oils from refining	8%
	D. Fatty alcohols	13%
15.12	Animal or vegetable fats and oils, hydrogenated, whether or not refined, but not further prepared:	
	A. Imported in immediate containers of a net capacity of 1 kg. or less	20%
	B. Otherwise imported	17%
15.14	Spermaceti, crude, pressed or refined, whether or not colored	7%

Listing of duties continued on next page.

International (Contd.):

Duties for Selected Fishery Products in Common Customs Tariff of the European Economic Community (Contd.)		
Tariff Heading Nos.	Description of Goods	Ad valorem Duty Rates
16.04	Prepared or preserved fish, including caviar and caviar substitutes (includes canned products):	
	A. Caviar and caviar substitutes	30%
	B. Salmonidae	20%
	C. Herrings	23%
	D. Sardines	25%
	E. Other	25%
16.05	Crustaceans and molluscs, prepared or preserved (includes canned products)	20%
23.01	Flours and meals, of meat, offals, fish, crustaceans or molluscs, unfit for human consumption; greaves:	
	A. Of meat and offals; greaves	4%
	B. Of fish, crustaceans or molluscs	5%
23.07	Other preparations of a kind used in animal feeding:	
	A. Fish and whale solubles	9%
32.09	A. I. Pearl essence	16%

FISHING LIMITS

SOME AGREEMENT REPORTED IN NORWEGIAN-BRITISH TALKS:

Important progress was achieved and a substantial measure of agreement reached in the negotiations between Britain and Norway on fishing limits and fishery relations, according to the statement issued in London and Oslo on July 1, 1960.

The negotiations took place in London from June 23 to 28. The two delegations then indicated they wished to obtain further instructions from their Governments before meeting again.

The statement issued said: "It is confidently assumed by both parties that a final agreement will be reached within the next few months well ahead of any change of the present situation in regard to fishery limits."

Since the talks have been held in the light of Norway's declaration in May 1960 of an intention to extend fishing limits from the present 4 miles to 12 miles, this statement would mean that agreement is expected before Norway puts her intention into practice.

Presumably good progress has been made towards an agreement whereby British trawlers would continue to fish in Norwegian waters during a phasing out period of 10 years while Norwegian claims to exclusive fisheries up to 12 miles would be respected after the phasing out period.

Such an agreement would follow the lines of the Canadian-United States proposal which both Governments supported at the Law of the Sea Conference at Geneva this spring, but which failed by one vote to win general acceptance.

Any Anglo-Norwegian agreement must be capable of being fitted into a wider multilateral agreement, and must not prejudice the present legal position of each side. (Fish Trades Gazette, July 2, 1960.)

GENERAL AGREEMENT ON TARIFFS AND TRADE

SIXTEENTH SESSION OF CONTRACTING PARTIES ENDED ON JUNE 4:

The 42 countries participating in the work of the General Agreement on Tariffs and Trade (GATT) ended their Sixteenth Session in June 4, 1960. This was after three weeks of intensive work in Geneva on current problems of international trade. Noteworthy developments at the Session included announcements by a number of countries on planned reductions of import restrictions; an examination of the European Free Trade Association and the Latin American Free Trade Area; agreement to attack the problems involved in "market disruption" which may be caused by sudden increases in imports of specific commodities; further progress in carrying out the GATT "program for the expansion of international trade;" and agreement on arrangements looking towards the provisional accession of Spain and Portugal to the General Agreement.

During the Session various delegations announced actions they are taking or plan to take in the further removal of import restrictions. According to statements made by representatives of the Netherlands, Belgium, Germany, Malaya, and Italy, these countries will announce new liberalization lists in the near future. It is expected that import restrictions will be removed on a number of products of particular interest in the United States. Furthermore, the United Kingdom and Australia stated that action will be taken looking toward the easing of remaining restrictions. These announcements are particularly gratifying to the United States, which has played a leading role in the drive for the removal of import restrictions by countries which have emerged from balance-of-payments difficulties.

The GATT Balance-of-Payments Committee held consultations before and during the

International (Contd.):

Session with a number of countries (Austria, Brazil, Greece, India, South Africa, and Uruguay) which still maintain import restrictions for balance-of-payments reasons. The United States took an active part in these consultations in order to encourage the maximum possible degree of progress in the further removal of restrictions that hamper the export of American goods.

The Contracting Parties discussed the question of the best way to deal with the import restrictions that may be retained after a country renounces its resort to the balance-of-payments exception in the agreement. There was a consensus that the full influence of the Contracting Parties should be used to minimize the extent of such restrictions and that the existing procedures of the Contracting Parties should be applied effectively and expeditiously to any restrictions that are retained. To expedite action a Contracting Party that emerges from balance-of-payments difficulties should promptly report any residual restrictions to the Contracting Parties, present its plans and policies for dealing with them, and stand ready to consult with other countries whose export interests are affected by the restrictions.

Specific commodity problems were discussed by the United States delegation on a bilateral and informal basis with other delegations, including those of Austria, Belgium, Denmark, Germany, and Italy. The discussions included a number of agricultural and industrial commodities for which American producers and exporters had requested information and assistance regarding trade restrictions. It is hoped these conversations will result in the relaxation of restrictions on United States products in the near future.

The Convention for the Establishment of the European Free Trade Association (EFTA), which had recently been ratified by Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom, was examined by the Contracting Parties in the light of relevant provisions of the GATT. The spokesman for the "Seven" emphasized that the Stockholm Convention had been drawn up with the intention of freeing their trade not only with one another, but also with the rest of the world. He stated that the signatories to the Convention were agreed that their cooperation in the EFTA should be firmly based on the principles of the GATT. The United States representative expressed the belief that, while certain aspects of the trade arrangements provided for in the Convention raised questions which might call for an adjustment on the part of the member states, the Stockholm Convention on balance deserved the support and approval of the Contracting Parties to the General Agreement. The provisions of the Convention were subsequently examined and discussed in detail by a Working Party, which submitted an interim report. It was agreed that the consideration of the Stockholm Convention should be continued at the Seventeenth Session.

The Latin American Free Trade Area was also discussed at the current Session. This new free trade area was established by the Treaty of Montevideo, signed on February 18, 1960, by representatives of four countries which participate in the GATT (Brazil, Chile, Peru, and Uruguay) and three which do not (Argentina, Mexico, and Paraguay). The spokesman for the signatory governments explained the purposes and the general provisions of the Treaty, emphasizing the conviction that it would contribute to an expansion of world trade. The United States delegation endorsed the Treaty objectives of achieving higher standards of living and accelerating economic development through elimination of intraregional trade barriers and the maximum utilization of productive factors. The signatory governments were assured that the United States would give sympathetic and serious consideration to the Treaty during the GATT review. The Contracting Parties created a Working Party to examine the Treaty in the light of its conformity with the objectives and provisions of the General Agreement.

The European Economic Community (EEC) reported on the progress it has made during the last six months in integrating the six member states. The spokesman stated that the more quickly integration is achieved, the more dynamic, open, and liberal will be the trade policy of the Common Market. In the ensuing discussion the United States and other contracting parties emphasized the importance of liberal trade policies by the Community. The United States and other agricultural exporters expressed concern about some of the agricultural proposals now under consideration in the EEC and stressed the need for assuring the highest possible level of international trade in agricultural products. In a separate statement a Commission spokesman discussed the Commission's preparations for participation

International (Contd.):

in the 1960-61 tariff negotiations, which, to a large degree, will be concerned with the new EEC common external tariff.

There is serious concern that sharp increases in imports in a narrow range of commodities could have adverse economic, political and social repercussions in some importing countries. As a result, quantitative restrictions on trade, particularly against manufactured exports coming from Japan and the less developed countries of Asia, continue to be widespread.

To meet these two related problems the Contracting Parties laid out a broad work program with the view to finding practical ways to facilitate an expansion of trade while avoiding possible adverse effects stemming from sharp increases.

The new program designed to deal with the problem of "the avoidance of market disruption" will be undertaken by a special Working Party established at the Session. Its first task will be to consider certain factual material already compiled by the GATT Secretariat on instances of possible market disruption, and to suggest multilaterally acceptable solutions consistent with the GATT principles for those problems which call for immediate action. The Working Party will try to develop suitable and temporary safeguards which would prevent market disruption and would permit further progress in eliminating the restrictions which now limit exports from Japan and the less-developed countries.

The second part of the Working Party's program will consist of a study of the basic factors involved in problems of market disruption.

The study will include an examination of the relevance to international trade of differences in wages, social changes and productivity among countries. In making arrangements for the study, the Working Party is expected to draw upon the services of experts in the field and of the International Labor Office.

At the 16th Session, the Contracting Parties reviewed the work of two special committees which had been set up to help promote the expansion of international trade and which had been meeting between sessions.

Committee II continued its consultations with individual countries on their agricultural policies as part of its work in carrying out its mandate to explore ways of expanding agricultural trade. Since the consultations began last September, 29 countries have been consulted, including the most important agricultural exporters and importers. This phase of the work is soon to be completed. The data gathered on a country basis will now be studied commodity by commodity to focus attention on the specific obstacles to expanding trade in particular products.

Committee III is seeking ways to expand the export earnings of the less-developed countries, thus accelerating their development and enabling them to be less dependent on foreign aid. The Contracting Parties approved the report of the Committee's March meeting where principal obstacles to increased exports of the less-developed countries had been identified. These consisted of high levels of revenue duties and internal fiscal charges, higher tariffs imposed on imports of processed goods compared to raw materials, tariff preferences, severe quantitative restrictions some of which discriminate against less-developed countries, state monopolies, and price-support policies of the industrialized countries. The Committee will examine the progress the industrial countries make in reducing these obstacles.

During the Session just ended, Portugal and Spain announced their desire to accede to the General Agreement. There was widespread support for these applications. It is anticipated that Portugal and Spain will engage in the negotiation of tariff concessions during the GATT Tariff Conference to be held in Geneva beginning September 1, 1960.

In addition, the GATT Executive Secretary was asked to begin consultations looking towards the eventual accession to the GATT of the newly-independent countries of Cameroon and Togo.

The Contracting Parties discussed the meetings held in Paris in January and March 1960 on economic matters. These meetings, attended by the 18 OEEC countries, the United States, Canada, and the Commission of the EEC, considered the reconstitution of the OEEC and certain European trade matters. The discussion of this item at the 16th Session centered mainly on the proposal for a new Organization for Economic Coopera-

International (Contd.):

tion and Development (OECD). Some concern was expressed by the Contracting Parties which would not be participating in the new organization about the role of the OECD in the trade field. The United States delegation reaffirmed its view that the GATT had a primary position in the field of international trade. Other delegations whose governments are participating in the Paris meetings also assured the Contracting Parties that it was not the intention to weaken in any way the position of the GATT. It was also made clear that any actions in the trade field would be in accordance with the provisions of the GATT. As evidence of their determination to observe GATT principles, the participating governments pointed to the fact that the Executive Secretary of the GATT took part in the discussions in Paris.

The Contracting Parties also dealt with technical reports which had been prepared by Groups of Experts regarding restrictive business practices, subsidies, state trading enterprises, and anti-dumping and countervailing duties.

* * * * *

ADDITIONS TO UNITED STATES LIST OF ITEMS FOR TRADE AGREEMENT NEGOTIATIONS:

The United States in June made public an extensive list of imported commodities, including fishery products, on which it will offer to make tariff concessions in international negotiations at Geneva in September 1960. The following fishery items were not listed previously:

Tariff Par.	SCHEDULE A Stat. Class. (1959)	Brief Description	Duty July 1, 1958	U. S. Imports 1959
				US$1,000
66	8420 270	Pearl essence	11%	761
1509		Pearl or shell buttons:		
	9724 000	Fresh water	1¾¢ line per gross plus 25%	97
	9724 100	Ocean	1¾¢ line per gross plus 25%	456
	9724 200	Button blanks, not turned, faced or drilled.	1¼¢ line per gross plus 25%	9

Note: See Commercial Fisheries Review, August 1960, p. 39.

* * * * *

COUNCIL ESTABLISHED TO CONSIDER MATTERS ARISING BETWEEN SESSIONS:

The Contracting Parties to the General Agreement on Tariffs and Trade (GATT) approved a proposal for the establishment of a Council.

Under the terms of a Decision, adopted in plenary session, a "Council of the Representatives of the Contracting Parties to the General Agreement" has been established. It is composed of representatives of all contracting parties willing to accept the responsibilities of membership in the Council.

In the course of the discussion in plenary session a number of delegates gave wholehearted support to the proposal to establish the Council. It was pointed out that this extension of the organization of the GATT would undoubtedly result in a more efficient handling of the business of the Contracting Parties.

The functions of the Council will be:

(1) To consider matters arising between sessions of the Contracting Parties which require urgent attention, and to report thereon to the Contracting Parties with recommendations as to any action which might appropriately be taken by them.

(2) To supervise the work of committee, working parties, and other subsidiary bodies of the Contracting Parties operating intersessionally, providing guidance for them when necessary, examining the reports of such bodies, and making recommendations thereon to the Contracting Parties.

(3) To undertake preparation for sessions of the Contracting Parties.

(4) To deal with such other matters with which the Contracting Parties may deal at their sessions, and to exercise such additional functions with regard to matters referred to above, as may be expressly delegated to the Council by the Contracting Parties.

If a contracting party considers it is adversely affected by the exercise by the

International (Contd.):

Council of any of its aforementioned functions which involve recommendations to individual contracting parties or the making of determinations or taking of decisions, it may suspend the operation of such action by the Council through the submission of a written appeal therefrom to the Contracting Parties.

Regarding procedural matters, the Council will select its own officers. It will be permitted to establish such subsidiary bodies as it considers appropriate to carry out its functions.

INTERNATIONAL ASSOCIATION OF FISH MEAL MANUFACTURERS

MEETING HELD IN HAMBURG, GERMANY:

Delegates from 10 countries attended meetings of the executive and scientific committees of the International Association of Fish Meal Manufacturers in Hamburg, Germany.

A Food and Agriculture Organization (FAO) observer attended the meeting of the scientific committee, and it was later announced that arrangements had been made for cooperation between FAO and the association on matters of mutual interest.

Other plans advanced were those for the interchange of scientific information and the provision of technical advice to manufacturers.

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

FISHWAY BUILT IN 1955 AIDS FRASER RIVER TRIBUTARY SALMON ESCAPEMENT:

The delay in this year's spring flood in the Fraser River is the same as that which created a serious obstruction to the Early Stuart run of sockeye in 1933 and 1955 near Yale, British Columbia. The immediate construction of a fishway by the International Pacific Salmon Fisheries Commission after the occurrence of the obstruction in 1955 has more than paid for itself during the first two weeks of July by successfully passing the Early Stuart escapement. If the Yale fishway had not been in operation, a serious decline in the returning run in 1964 would be a foregone conclusion. The unladdered obstruction in 1955 reduced a spawning escapement of 35,000 fish to only 2,170 poor-quality spawners.

In spite of a complete closure to fishing in 1959, only 2,663 sockeye returned from the 1955 crop to spawn, thus necessitating another complete fishing closure in 1963 to permit full rehabilitation. The economic importance of having the Yale fishway in operation is obvious, the Commission reported on July 14, 1960.

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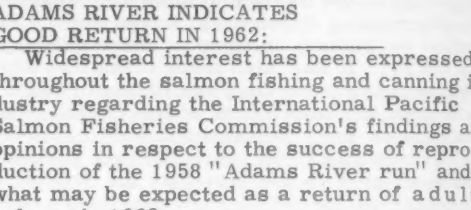
SUCCESSFUL SOCKEYE SALMON SPAWNING FROM 1958 RUN TO ADAMS RIVER INDICATES GOOD RETURN IN 1962:

Widespread interest has been expressed throughout the salmon fishing and canning industry regarding the International Pacific Salmon Fisheries Commission's findings and opinions in respect to the success of reproduction of the 1958 "Adams River run" and what may be expected as a return of adult salmon in 1962.



Salmon on their nest.

The isolation and assessment of the factors controlling total survival of sockeye is a relatively new study and while considerable progress has been made in the field by the Commission, any conclusions must be examined with caution.

Final estimates of the 1958 Fraser River system run approximate 19 million sockeye salmon, 15 million being produced in the South Thompson watershed ("Adams River run"). Of the 15 million fish, 72.3 percent or over was produced in Lower Adams River proper while 27.7 percent or less was produced in Little River and the South Thompson River below Little Shuswap Lake.

An examination of historical records indicate that the 1958 "Adams River run" may have exceeded an all-time record in production. The timing and size of the 1954 escapement was very favorable and spawning, incubation, and rearing conditions were excellent. In addition, sea survival probably approached a maximum which has not been equalled in the last ten years. With all factors favorable for the good survival of the 1958 run, it must be concluded that the pos-

International (Contd.):

sibility of a similar Adams River run reoccurring falls in the same category as the 50- or 100-year flood.

While the abundance of the 1958 Adams River run cannot be expected to reoccur except by chance, mistakes in regulation can cause unnecessary and drastic declines in survival. Data collected by the Commission demonstrate that if emergency and timely action had not been taken, the 1962 Adams River run would be a serious failure.

Unlike the parent 1954 run, the 1958 run was 10 days late in their arrival in the fishery. The run was extended and a large percentage of the escapement reaching the delay area off the mouth of the Fraser River consisted of fish of the latter part of the run. Regulation in the river was controlled to permit the first peak of escapement to reach the spawning grounds. These were healthy fish and were in top condition as many industry observers can testify. After the proper number of fish had escaped, at least 1.5 million fish of the latter part of the run remained to be caught. These fish likewise escaped because of a price dispute in the fishery. Their upstream migration was greatly extended with several hundred thousand failing to reach their spawning grounds. The late spawners arriving at the spawning grounds, estimated at over 1 million sockeye, were prevented from entering Adams River by an electric fence. These fish spawned on the shores of Shuswap Lake and in Little River which had already been fully seeded by good quality spawners.

Winter surveys revealed an excellent hatch in Adams River--none on the shores of Shuswap Lake (exposed by winter low water) and very few in Little River. It is quite apparent to the investigators that the bulk of the return in 1962 may be attributed to the installation of the electric fence. Had the fence not been installed, a failure in the 1962 run would have been a foregone conclusion irrespective of the degree of sea survival.

Observations by the Commission staff during the 1960 spring months have revealed a very substantial seaward migration of yearling sockeye from Shuswap Lake. Due to the volume of flow in the South Thompson, it is not possible to devise an accurate enumeration of the downstream migration. Indices established in the spring of 1956, when the 1958 fish went to sea as yearlings, could not be used this year because of very adverse weather conditions and the resulting change in the character of the downstream migration. It can only be concluded from extensive field observations that this spring's migration was substantial--the Commission staff believes it to be less than that which produced the 1958 run. The size of the migrants for the two migrations compared favorably, indicating that rearing conditions in the lake were good.

If the sea survival of the two migrations being compared were approximately equal, it may be stated with confidence that a substantial run will return in 1962 although it would not equal that of 1958. Unfortunately, sea survival cannot as yet be accurately predicted, but it should not approach the record established by the 1958 run, thus causing a further diminution in the comparable size of the returning run.

Further estimates on the eventual size of the 1962 run will not be available until the fall of 1961 when the 3-year-old jack sockeye have returned to the spawning grounds. Whatever the size of the 1962 run, the Commission staff firmly believes that the electric fence placed in the mouth of Adams River forestalled a very serious failure in the success of reproduction. This conclusion is properly based on the excellent hatch in Adams River where the escapement was controlled by the fence and the very poor hatch in Little River where spawning was not controlled.

INTERNATIONAL WHALING COMMISSION

WHALING CONVENTION RATIFIED BY ARGENTINA:

The International Whaling Convention and schedule of regulations, signed at Washington December 2, 1946, and entered into force on November 19, 1948, has been ratified (with a reservation) by Argentina. Ratification was deposited on May 18, 1960.

Argentina on the same date also deposited its adherence (with a reservation) to the protocol amending the International Whaling Convention of 1946, done at Washington November 19, 1956, and entered into force on May 4, 1959.

International (Contd.):

INTERNATIONAL PACIFIC HALIBUT COMMISSION

NORTH PACIFIC HALIBUT FISHING ENDED IN MAJOR AREAS:

Areas 2 and 1B Closed: The closure of the first fishing season in North Pacific halibut Areas 2 and 1B effective at 6 a.m. (P.S.T.) July 31, 1960, was announced by the International Pacific Halibut Commission on July 22, 1960. The Commission estimated that the 26.5-million-pound limit set for Area 2 would have been caught by the closing date. Area 1B, which has no catch limit, was also closed when the quota for Area 2 was attained.

A typical Pacific Coast halibut schooner.

Areas 2 and 1B this year were open to halibut fishing for 91 days, as compared with 68 days in 1959, 59 days in 1958, and 47 days in 1957. These same areas were fished for 38 days in 1956 (fishing started May 20), 24 days in 1955, 21 days in 1954, and 24 days in 1953.

The longer period required to catch the Area 2 catch limit this season is attributed to lighter catches and fewer vessels fishing the area.

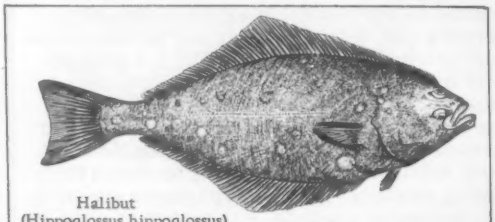
The second fishing season in Areas 2 and 1B began at 6:00 a.m. (P.S.T.) September 11, for a period of 7 days without a catch limit. After 6 a.m. (P.S.T.) September 18, the areas were closed to halibut fishing until the commencement of the halibut fishing season in 1961. Area 2 includes all convention waters between Willapa Bay, Wash., and Cape Spencer, Alaska. Area 1B includes all convention waters between Willapa Bay, Wash., and Heceta Head, Oreg.

Halibut landings from Area 2 as of July 19, 1960, totaled 24.3 million pounds. In 1959 Area 2 closed on July 8. This is the first year that Area 3A closed before Area 2. Area 1B fishing seasons are identical to those for Area 2.

Area 3A Closed: Fishing in Pacific Halibut Area 3A ended at 6 a.m. (P.S.T.) on July 25, 1960. The Commission announced the closing of that area on July 5, since it estimated that by July 25 the catch limit of 30 million pounds for Area 3A would be reached. As of July 19, 1960, the landings of halibut from Area 3A were 25.6 million pounds. The Area 3A closure this year is 7 days earlier than in 1959 when fishing ended on August 1. In 1958 fishing in Area 3A stopped on August 31 and in 1957 on September 22.

Area 3A includes the waters off the coast of Alaska between Cape Spencer and Shumagin Islands. There will be no fishing in Area 3A until the season reopens in 1961.

This year Area 3A was open to fishing for 85 days as compared with 92 days in 1959. In 1958 the area was open to fishing for 92 days and in 1957 for 144 days (the longest season for the area since 1945 when the area was open to fishing for 147 days). Between 1945 and 1955 the trend had been towards a shorter season, but then the trend reversed itself and through 1957 the seasons were longer. However, beginning in 1958 the trend was reversed again and the seasons have become shorter. Area 3A was open for halibut fishing for 104 days in 1956, 81 days in 1955, 58 days in 1954, 52 days (shortest on record) in 1953, 60 days in 1952, 56 days in 1951, 66 days in 1950, 73 days in 1949, and 72 days in 1948.



Halibut
(Hippoglossus hippoglossus)

The official opening date for all halibut fishing in the North Pacific regulatory area this year was May 1 at 6:00 a.m. (P.S.T.), except that fishing in Area 3B commenced on April 1.

The fishing season in Areas 1B and 3B will continue until 6:00 a.m. (P.S.T.) October 16. Area 3B includes all waters west of Area 3A including the Bering Sea. Area 1A is south of Heceta Head, Oreg.

Under authority of the Convention between Canada and the United States of America for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea, this year's regulations became effective March 24, 1960.

Aden Colony

FISH LANDINGS INCREASED IN 1959:

Landings of fish in the Aden Colony were good in 1959, resulted in increased income during the year, and contributed to a holding down of the cost of living. Fish constitutes an

Aden Colony (Contd.):

important item of diet in the Colony. Six additional motorized fishing boats were added to the Colony's fleet of those craft which numbered 60 as of late May 1960. The Fisheries Department continued its policy of aiding fishermen through loans to mechanize their boats.

Aden's Landings of Food Fish by Principal Species, January-October 1958-59

Species	January-October	
	1959	1958
	..(1,000 Lbs.)..	
Mackerel	893	1,010
Kingfish	633	215
Little tuna	61	44
Bluefin tuna	75	77

Nylon and synthetic fibres are being employed to an increasing extent and financial assistance is being given to fishermen to purchase better equipment through the Cooperative Fishing Gear Supply Society. (United States Consulate, Aden, May 25, 1960.)

Argentina

FROZEN FISH NOW BEING SOLD FOR FIRST TIME:

Frozen fish have been offered in Argentine retail markets since about April 1, 1960, for the first time. The fish are processed by a Mar del Plata firm, an established producer of canned fish and fishery byproducts. Five varieties of fish are now frozen--fillets of hake, "cornalitos," anchovies, swordfish, and squid. All are marketed in packages containing 400 grams (about 14 ozs.) of fish.

The processing firm has installed a freezing plant in one of its two factories located in the fishing port of Mar del Plata. The deep-freezing equipment was imported from the United States, and a special filleting machine was purchased in Germany. The fish are quick-frozen at a temperature of -40° C. (-40° F.). This firm does not maintain its own fishing vessels but purchases fish from the Mar del Plata fleet.

The company reports that the frozen fish have been well received although the project is still in the trial stages and the fish have been offered only in Buenos Aires. Approximately 40,000 packages were sold during April and May. Wholesale prices range from 11.90 pesos (about 14.3 U. S. cents at exchange rate of 83.2 pesos to US$1) for the package of "cornalitos" to 27.50 pesos (about 33.0 U. S. cents) a package for the squid. In order to promote this new product, the firm has engaged in a newspaper advertising campaign stressing the convenience and flavor of frozen fish and offering suggested recipes. Production is to be increased soon and additional varieties of fish will be offered.

Two serious problems must be overcome, according to company representatives, before large sales increases can be expected. In order to sell frozen fish, grocers must have freezer-display cases capable of maintaining a constant temperature of at least -20° C. (about -4° F.); very few stores now have such freezers which cost approximately 30,000 pesos (about US$361) each. The fish-freezing firm is encouraging grocers, delicatessens, and fish markets to obtain these freezers. Sales of frozen fish are now limited to about 180 stores which have deep freezer display cases. An equally difficult problem is presented by the traditional reticence of the Argentine public to consume fish. The firm hopes to overcome this obstacle through advertising, according to a June 27, 1960, report from the United States Embassy in Buenos Aires.

Australia

BANS CANNED WHITING IMPORTS FROM UNITED KINGDOM:

After October 1, 1960, Australia banned imports of canned fish fillets labeled "whiting" from Great Britain because the whiting (Gadus merlangus) is different from the high-priced quality fish known as whiting in Australia. The technical names of the principal varieties of Australian whiting are: Sillago ciliata, Sillagi noides punctatus, and Sillago bassensis. The total Australian whiting catch in 1957/58 was three million pounds round weight. (United States Embassy, Canberra, July 1, 1960.)

* * * * *

CLOSED SEASON FOR FEMALE SPINY LOBSTERS:

From June 1 to October 31, inclusive, the taking of female spiny lobsters (Jasus lalandii) in the territorial waters of Victoria and Tasmania, Australia, and in the adjacent

Australia (Contd.):

Commonwealth waters, is prohibited. The closure will apply in future years as of the same dates.

In 1959 the closure was from August 1 to November 30 for that year only, but it was announced that the future yearly closure would be from June 1 to November 30. The dates finally agreed upon are June 1 to October 31. (Australian Fisheries Newsletter, June 1960.)

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PREPACKAGED FROZEN FISH IMPORTED FROM GREAT BRITAIN:

Prepackaged frozen fish is being shipped to Australia from England and Scotland. Trade in Australia for prepackaged fish is expanding rapidly.

The fish is imported in Australia by the biggest food-processing organization in the Southern Hemisphere, with headquarters at Bathurst, New South Wales. The export manager said: "Our imports of fish from Britain have increased by 500 percent in the last three months, and we expect to buy about £1,000,000 (US$2.8 million) worth within the next 12 months."

The fish, which are enjoying growing popularity in Australia, include whiting, flounders, and bream from Liverpool, Grimsby, Glasgow, and London. (Fish Trades Gazette, May 21, 1960.)

Brazil

EXPORTS OF SPINY LOBSTERS SET RECORD IN APRIL:

Exports of spiny lobsters from Recife, Brazil, to the United States set a new record of 50,236 pounds during April 1960. The month of April is usually considered to be part of the "off season" by Brazilian fishermen, the United States Consulate at Recife reported on June 22, 1960.)

* * * * *

INSPECTOR TO BE PLACED ABOARD JAPANESE TUNA FISHING VESSELS:

A large Japanese fishing company presently has a contract with the Brazilian Government which permits three of their vessels to base in Recife and fish Brazilian waters in exchange for selling their catches of tuna within Brazil. There have been increasing complaints about these refrigeration-equipped vessels returning to Recife after several weeks at sea with empty holds. The Commander of the Third Brazilian Naval District suspects that the Japanese land their catch of tuna in Trinidad where it is sold on a "free market" basis.

The Commander now plans to place one of his sailors aboard each such foreign-controlled vessel as a passenger and inspector. The Brazilian Navy also uses a total of six corvettes to patrol the northeastern waters and the fishing industry. (United States Consulate at Recife reported on June 22, 1960.)

British North Borneo

FISHERIES TRENDS, JUNE 1960:

There is very little information on the landings of fish and shellfish in the British Colony of North Borneo. However, some statistics are maintained on the export trade in marine products. In 1959, North Borneo exported about 4.1 million pounds of marine products valued at about US$491,000. As compared with 1958, the exports were higher by about 1.3 million pounds in quantity and US$88,500 in value.

British North Borneo Exports of Marine Products, 1959

Product	Quantity	Value	
	1,000 Lbs.	Malayan $1,000	US$ 1,000
Fish, fresh or frozen	1,410	343	112
Fish, dried or salted	1,157	377	124
Shellfish (shrimp, clam meats, etc.)	187	120	39
Fish and shrimp meal	617	60	20
Pearl, trochus, and green snail shells	653	530	174
Other1/	46	75	22
Total	4,070	1,495	491

1/Includes turtle shell and eggs, fish roe, trepang, fish skin and gills, and dried sea horse.

Marine fishing in British North Borneo (in the past mainly confined to inshore waters and estuaries), with an increase in use of power boats, has now been gradually extended to offshore waters. Three different methods of deep-sea fishing have been introduced and of the three, otter trawling is firmly established as catches have been and still are good. The other methods, namely: beam trawl for shrimp and rod-and-line fishing with use of live bait for tuna, have only been tried out recently and

British North Borneo (Contd.):

catches so far proved satisfactory. Trials on the use of the Hong Kong-type beam trawl for shrimp were carried out in the areas outside Sandakan Harbour. Results have been found to be promising.

A 210-ton Japanese tuna vessel, complete with live bait for bonito and tuna fishing with pole and line, arrived about June 1960 to try out fishing in the areas South of Si Amil Island. Catches have proved extremely good. Species of tuna caught were mainly skipjack or striped tuna and a small percentage of yellowfin tuna.

Fourteen fish ponds (covering a total of 4.03 acres) were constructed and stocked during 1959. The majority were situated in the Keningau and Tenom districts of the Interior Residency. Total number of fish ponds in the Colony at the year's end was 660 covering an area of 44.1 acres.

Total production of pond fish in 1959 was estimated at 18 tons. Retail prices for good pond fish (sold alive), although varying between different districts, was generally high. This, combined with a steady demand, did much to encourage the industry.

Yield of tilapia in "monosex" culture increased from 1,866 to 2,133 pounds per acre per year by adjusting the stocking rate. More and more fish farmers are adopting this method; there were $4\frac{1}{2}$ acres of ponds in Keningan and $2\frac{3}{4}$ acres in Tenom stocked with male tilapia at the end of 1959. (United States Consulate, Singapore, June 29, 1960.)

Canada

VALUE OF BRITISH COLUMBIA FISHERIES DOWN SHARPLY IN 1959:

During the height of British Columbia's 1959 summer fishing season the entire industry was paralyzed as a result of a dispute between the fishermen and shoreworkers and salmon industry management over the price of salmon and wages for shoreworkers. Nevertheless, during the off-cycle sockeye salmon year of 1959, British Columbia fishermen caught more salmon than expected and exceeded the catch of the last cyclical year of 1955. It is estimated that the wholesale value of fish products marketed in 1959 will be above C$66.5 million as compared to $98 million in 1958, which was a very good year.

During the last three months of 1959, fishermen landed good catches of herring, which is second to salmon in value. However, depressed world oil and meal prices resulted in the reduction plants refusing to purchase any more herring after mid-December, effectively closing the season.

Halibut landings were up nearly one million pounds in 1959 as compared to 1958 which had a slightly longer fishing season. However landed values for halibut were down in 1959 from the preceding year due to a decline of about two cents a pound in average prices.

The restoration of sterling convertibility in the dollar area resulted in the United Kingdom becoming a ready buyer of British Columbian fishery products. British Columbia now sells more fish products to the United Kingdom than to the United States. In the first nine months of 1959, the United Kingdom imported $11,530,965 worth of fish products as compared to United States imports of C$9,629,500. During the same period, exports to countries of the European Common Market were good. (United States Consulate, Vancouver, June 14, 1960.)

Chile

PRODUCTION, FOREIGN TRADE, AND CONSUMPTION OF WHALE AND SPERM OIL:

Chilean whale and sperm oil production shows a steady increase for the period 1957-60. Domestic consumption and exports also show an upward trend since 1958, although exports are expected to drop 23.1 percent in 1960 as compared with 1959. Imports are negligible.

Table 1 - Chile's Whale and Sperm-Oil Production, Exports, and Domestic Consumption, 1958-1960

Year	Production	Exports	Domestic Consumption 1/
		(Metric Tons)	
1960 2/	8,600	200	8,400
1959 3/	8,400	4/260	8,140
1958 5/	7,800	120	7,680

1/ Breakdown into edible and industrial use not available, but bulk enters into manufacture of margarine.
2/ Forecast.
3/ Preliminary
4/ All shipped to Germany.
5/ Revised.

Chile (Contd.):

The number of whales caught in 1959 totaled 2,620--the largest catch on record. In 1958, a total of 2,280 whales were caught and in 1957 a total of 2,512. Most of the whale catch consists of sperm whales. (U. S. Foreign Agricultural Service Report, Santiago, April 25, 1960.)

Table 2 - Products of Chilean Whale Catch, 1957-1959

Products	1959	1958	1957
		(Metric Tons)	
Sperm oil	4,600	4,000	4,200
Whale oil	3,800	3,300	3,480
Total	8,400	1/7,300	7,680
Meat	250	210	220
Whale meal	1,400	1,020	1,050
Bone oil 2/	1,900	1,600	1,800

1/Evidently the revised figure in table 1 is more accurate.
2/Includes a small amount from species other than marine animals.

Cuba

RESOLUTION RESTRICTS OYSTER HARVESTING:

The Cuban National Fishery Institute in a resolution published in the Official Gazette (Annual No. 102), May 30, 1960, restricts as of June 1, 1960, the exploitation of oysters (Crassostrea rizophorae) on all Cuban coasts, except in the Provinces of Camaguey and Oriente. Continued harvesting is permitted on the coasts of those two latter provinces, but the transport and marketing of oysters obtained in those provinces must be covered by a permit. The Resolution states that oysters were being overexploited on commercial oyster beds in the western part of Camaguey Province, resulting in the reduction in the average size. (United States Embassy in Habana, July 1, 1960.)

Egypt

REFRIGERATED TRUCKS FOR FISH TRANSPORT:

The Egyptian General Authority for Storage Affairs has received an appropriation of ŁE35,000 (US$99,330) from the budget for the purchase of five refrigerated trucks. The new trucks will be used to transport fresh fish from Suez to other parts of Egypt. The trucks will be part of a larger program for establishing cold-storage centers and otherwise expanding and improving the fisheries industry. (United States Consulate, Port Said, July 5, 1960.)

German Federal Republic

FISH PROCESSING WORKERS AT HAMBURG GET WAGE INCREASE:

Negotiations between the West German Food Workers Union and representatives of the Hamburg fish processing industry resulted in a wage increase of DM 0.11 (about 2.6 U. S. cents), or about 5 percent, per hour, for workers in that industry retroactive to June 1, 1960. The increase would raise the hourly rate for those workers to about 55.4 U. S. cents an hour. (United States Consulate, Hamburg, June 23, 1960.)

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IMPORTS OF FISH OILS, 1953-1959:

In 1959 West Germany's imports of marine fats and oils remained practically on the same level as in 1958. The share of edible marine oils in total fat and oil imports continued to decline due to a decline in use of marine fats and oils and a growing preference for vegetable oils by the margarine industry.

West German Imports of Fish Oil, 1953-59

Year	Total Imports	Imports from U. S.	Percent Imported from U. S.
	(1,000 Metric Tons)		Percent
1959	65.0	22.0	33.8
1958	64.3	21.3	33.1
1957	67.0	28.5	42.5
1956	84.0	39.0	46.4
1955	67.9	31.8	46.8
1954	109.2	34.2	31.3
1953	82.7	32.4	39.2

Source: West German Federal Statistical Office.

The United States share of West Germany's imports of fish oils, except for a slight increase in 1959 over 1958, has been declining steadily since 1955.

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MORE ORDERS PLACED FOR STERN-TYPE TRAWLERS:

The West German fisheries have during the last two years put into operation a total of four stern-type trawlers. In addition, five West German deep-sea fishing companies have placed orders in recent months for 12 more stern trawlers. These orders form more than 50 percent of the 23 orders for deep-sea fishing vessels on the books of West

German Federal Republic (Contd.):

German shipyards as of late April 1960. The remaining 11 trawlers, which are all conventional, are the last of an earlier large-scale building program. The West German fishing companies for which these vessels are being constructed have indicated that any future orders will be for stern trawlers.

It would appear, therefore, that the West German fishing trade has become convinced that the stern trawler offers definite advantages over the conventional side-trawler. From experience gained from the operation of stern-type trawlers, it is probable that the West German fishing companies have found them more profitable than the side-type trawlers. (United States Consulate, Bremen, April 27, 1960.)

Ghana

NEW FACILITIES FOR FISHING INDUSTRY:

The Government of Ghana is trying to increase fish production in several ways. A cooperative fish marketing center with cold-storage facilities was opened by the Agricultural Development Corporation at Takoredi on May 18. The new fishing harbor at Elmina is now in operation and a large fish landing area with complete facilities will be available before the end of this year at the new port of Tana. The Government is encouraging canoe-fishermen to acquire outboard motors. A National Fishing Industries Board is to be established, presumably with Government capital, to promote further development in this important field. (United States Embassy, Accra, July 11, 1960.)

Iceland

FISHERIES AIDED BY NEW LAWS:

Certain laws affecting the fishing industry were passed by the Icenlandic Parliament (althing) before it adjourned June 3 until October 10, 1960.

The Price Control Act reorganizes price administration, including the establishment of a new price control committee made up of two Independence Party members, one each from the other three parties, and the Under Secretary of the Ministry of Commerce.

A bill providing for limited and controlled drag-net fishing for flounder within the 12-mile limit was also passed. This aroused considerable opposition from conservation advocates.

A step toward additional fish-quality control was voted to set up an inspection system for fresh and iced fish. This reflected strong recent demands in and out of the Parliament for measures to improve the quality of fish for export.

Both the fisheries and the shipyards are expected to benefit from another act which for the first time will permit loans from the Fisheries Fund direct to Icelandic shipyards for fishing vessel construction. (United States Embassy at Reykjavik, June 10, 1960.)

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NORTH COAST HERRING FISHING SEASON UNDER WAY:

Early in June 1960, active preparations were under way for the opening of the Iceland north coast herring season.

The Coast Guard research vessel Aegir completed a survey which indicated a plentiful supply of plankton. Several herring plants have chartered a Norwegian vessel to shuttle the fish from fishing vessels to processing plants ashore. About 40 percent of the herring vessels have recently installed a new type of net-retrieving gear, patented in the United States.

Contracts for deliveries of north coast salted herring approximate those of last year: Soviet Union 80,000 bbls., Finland 51,000 bbls., West Germany 5,000 bbls., and Denmark 3,000 bbls. The Swedish contract for 85,000 bbls. was at a less favorable price, but was for 25,000 bbls. more than the 1959 contract.

A Herring Production Board representative is also attempting to conclude sales contracts in the United States. The 1959 Icelandic export to the United States was unusually small, amounting to only 94.5 metric tons. (United States Embassy at Reykjavik, June 10, 1960.)

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Iceland (Contd.):

FISHERIES TRENDS, JUNE 1960:

Total landings during the first four months of 1960 by Icelandic fisheries amounted to 201,103 metric tons as compared with 193,018 metric tons for the same four-months period of 1959. More cod and haddock were landed than ocean perch, which is a reversal of the 1959 trend.

The north coast Icelandic herring season was well under way at the end of June with landings up about fourfold from the same period of 1959. The 1959 North Coast herring fishery season was very good. On June 27, the Herring Production Board announced that the salting of herring could commence. Due to the low fat content of the earlier landings, most went to fish meal and oil reduction plants.

The good news regarding the over-all fish catch as well as the start of the herring season was clouded by the knowledge that fish oil and meal prices are extremely poor. Practically all storage facilities for both oil and meal in Iceland are filled with unsold stocks.

The Icelandic Freezing Plants Corporation announced on June 24, 1960, that it had concluded a contract for the sale of 2,500 tons of frozen herring to West Germany. Although the price was said to be somewhat lower than that received in Eastern Europe, the importance of gaining a foothold in that new market was stressed.

On June 17, the Iceland Foreign Office announced that Iceland had signed a multilateral trade and payments arrangement with Finland thus joining 13 other Western European countries in becoming a member of the "Helsinki Club." The agreement took effect on December 29, 1959.

In January this year, Iceland and Finland agreed to scrap the old bilateral barter trade agreement between the two countries. Icelandic salted herring will now enter free from Finnish import license requirements, the United States Embassy in Reykjavik reported on July 1, 1960.

India

UNITED NATIONS SPECIAL FUND ALLOCATION TO INDIA FOR FISHERIES TRAINING INSTITUTE:

The Governing Council of the United Nations Special Fund on May 27 approved a program of 30 new projects and included among them was one of interest to fishery interests.

On the recommendations of a committee appointed to assess and review the training of fisheries officers, the Government of India has decided to establish a Fisheries Training Institute to train district fisheries officers for the Central and State governments and managers for the fishing industry as well as training instructors. There will thus be provided trained leaders in the techniques of developing and exploiting inland and marine fisheries. Such training could also be offered to applicants in other countries in southeast Asia. The Institute will be equipped with laboratories, a library and workshops, a fisheries training vessel, and an auxiliary boat, machinery and gear.

The Special Fund allocation is $610,300 and the Indian Government's counterpart contribution is the equivalent of $730,000. The duration of the project is three years and the executing agency is the Food and Agriculture Organization. The Special Fund will assist the Government of India in providing the services of experts, equipment, and fishing gear. The Indian Government contribution will provide counterpart personnel, buildings, fishing craft, and the payment of overhead costs.

Indonesia

FISHERIES LANDINGS IN NORTH SUMATRA HIGHER IN 1959:

According to the Fisheries Department of the Indonesian Province of North Sumatra (which is comprised of East Sumatra and Tapanuli), landings of fishery products in that area in 1959 totaled 62.3 million pounds, valued at Rp.225.4 million (about US$7.1 million), as compared to 53.3 million pounds in 1958. The comparatively favorable weather conditions during 1959 were given as one reason for the larger catch.

Indonesia (Contd.):

During 1959, 40,456 fishermen (including 9,699 part-time fishermen) were engaged in the fishing industries in North Sumatra, of whom four-fifths were in East Sumatra alone. A total of 8,931 fishing vessels were used in North Sumatra of which 355 were motorized.

Most of the fishing enterprises (a total of 425) operating in East Sumatra are Chinese-owned, with only 64 Indonesian-operated. Of the 202 fishing enterprises in Tapanuli, only 3 were Chinese-owned.

For the past years plans have been made with United States help for the modernization of the fisheries of North Sumatra by using trawlers and long-lines. However, the plans have not been carried out because of the non-availability of funds from the Indonesian Government. The United States fisheries adviser stationed in Medan has returned to the United States and has not been replaced. (United States Consulate in Medan, June 24, 1960.)

Japan

CANNERS AND EXPORTERS AGREE ON CANNED TUNA EXPORT PRICE:

Japanese tuna canners and traders in July settled the export price for canned tuna-in-brine. Canners agreed to cut the whitemeat price $1 to US$9.15 a case for the next sale (in July), but asked that it be raised to $9.25 a case for the August sale. They want the l lightmeat price held to the present $6.80 for the next sale (in July), and then raised to $7 for the sale after that (in August). The traders accepted this plan. The July sale included 200,000 cases of white meat and 100,000 cases of lightmeat--the total for this year through July was 810,000 cases of whitemeat and 770,000 cases of lightmeat.

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MOTHERSHIPS TUNA FISHING OFF FIJI ISLANDS REPORT GOOD CATCHES:

The two Japanese mothership fleets fishing tuna off the Fiji Islands were continuing to make good catches. As of mid-July the No. 3 Tenyo Maru had taken aboard 3,340 tons, while the Nojima Maru had produced 3,800 tons.

The Tenyo Maru ceased receiving fish from July 12 to 16, in order to put 600 tons of tuna aboard the carrier No. 31 Banshu Maru, but was to begin taking fish from the catcher boats again on July 17.

The catches of the two fleets were: Tenyo Maru--albacore tuna 740 tons; spearfishes 274 tons; yellowfin tuna 1,905 tons; bluefin tuna 220 tons; sharks 174 tons. Nojima Maru--yellowfin tuna 2,660 tons; big-eyed tuna 342 tons; albacore tuna 285 tons; spearfishes 266 tons; skipjack tuna and sharks 159 tons. Both fleets had attained about 50 percent of their catch goals. Towards the latter part of July they were expected to move south and fish for albacore tuna. (The Suisan Keizai, July 20, 1960.)

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SUMMER ALBACORE FISHERY FAILS TO LIVE UP TO EXPECTATIONS:

The 1960 summer albacore tuna season this year began amid predictions that a catch of 20,000 to 30,000 metric tons was certain, because ocean conditions were of the pattern found in years of good catches. The fishermen, therefore, hoped to make up this year for the poor catches of the past two years. However, due to two unexpected typhoons, the good fishing areas of the early part of the season failed, and the season ended badly late in June after a promising beginning. From the statistics assembled by mid-June, it was estimated that the total catch for this season will be approximately 20,000 tons, which is twice as much as last year and about 10 percent more than the year before last, but still less than the 25,000 to 30,000 tons of normal seasons.

This year the course of the warm Kuroshio Current was blocked off Shizuoka Prefecture by a cold-water mass, and the Kuroshio Current swung far out to the east, creating an unusually large outer boundary zone of low water temperatures as it moved northward. Consequently, there seemed to be a strong probability that albacore fishing grounds would be formed over a broad area extending from the coast out to distant waters, and right from the start the season was marked as one in which a big catch could be expected. Because of this fact, about 300 tuna boats assembled from all over the country at the ports of Yaizu and Shimizu, the size of the fleet far exceeding that of last year. Because of their poor catches of the past two years, the operators looked on this season as a crucial one, which would foretell the fate of the live-bait tuna fishery, and they were determined to make the most of it.

In mid-May, the fishery finally got under full swing. One boat after another brought its catch into Shimizu and Yaizu, and day after day tons of albacore were piled up in the markets of those ports. High boats brought in around 60 metric tons, the average was 10 to 15 tons, and the forecasts appeared to have hit the mark. At Yaizu, on May 30, landings reached 607 tons, breaking the previous record of 500 tons for the end of May set in 1957. However, although the total deliveries to the markets reached high levels, the catch per boat was unexpectedly poor. The majority of the boats brought in only 14 or 15 tons, and big catches were only about 30 tons. Top catches of about 56 tons were exceptional. A few years ago landings of 37 tons were nothing unusual.

Japan (Contd.):

There were probably various reasons for this, but there were three main ones: (1) The schools moved fast this year and responded poorly to the bait. (2) The Chilean tidal waves washed out bait stocks in many baiting areas and created a shortage of live bait. Fishermen tried using small mackerel as a substitute for sardines and anchovy, but it was unsuccessful. The poor response of the schools to bait is considered to have been due to the fact that the deep penetration of the cold Oyashio Current into the warm Kuroshio Current had created an abundance of food so that the fish were always full. (3) The presence of a large fleet on limited fishing grounds caused the boats to hold down each others catches by competition.

The result is that vessel owners are complaining that they are barely able to keep their heads above water financially. According to a survey at Yaizu, the boats belonging to that port made for the most part four trips and grossed only about 4-6 million yen (about US$11,200 to $16,800). It is said that trip expenses for a live-bait boat of the 100-ton class run around 800,000 yen (US$2,240) and for a vessel of the 150-ton class they are 1 million yen (US$2,800). Therefore, the income picture for this summer albacore season has been on the black ink side of the ledger, but it does not represent much as this is the fishermen's best opportunity for making money during the entire year. They feel that if they could land something over 10 million yen (US$28,000) worth of albacore, that would be a different story.

In 1959 at Yaizu alone more than 10 boats gave up live-bait fishing and converted to long-lining, and the figure for the whole country was over 50 converted boats. One boat owner who has resolved to convert says that there is a strong probability that there will be others who will give up their traditional pole-and-line fishing. This trend also shows in vessel construction, with a clearly apparent move toward the building of purely long-line vessels. Last year in the Yaizu area there were 7 new long-liners built, two of them of 410 tons gross, but there was not a single live-bait boat built. The result has been that in the membership of the Yaizu tuna fishermen's cooperative association, the vessels are now evenly divided, 30 pure long-liners to 30 combination long liner-bait boats. If more boats are converted to long-liners, the past makeup of the fleet will be reversed.

At any rate, if the typhoons had come one month later, as in normal years, the fishermen would have expected to make as good a catch as in 1957. (The Suisan Keizai, June 30, 1960.)

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SKIPJACK TUNA PORT LANDINGS LIGHT:

Normally in July Yaizu, the leading skipjack port in Japan, would be bustling with the peak of the skipjack season, but it looks as if this year the skipjack have passed by Yaizu. June 1960 landings of all fishery products at Yaizu were 13,029 metric tons, worth 1,218 million yen (US$3.4 million), 3,300 tons less than in June of last year. Landings of most tunas were above last year's, but skipjack, which make up the bulk of Yaizu's summer landings, were less than one-third of last year.

Last summer skipjack were unusually abundant, and in June landings were 10,000 tons, making up more than 60 percent of all landings for that month. Every day there were landings of 300 to 400 tons, with a record one day of 890 tons of skipjack. This June skipjack landings were only 3,240 tons. Fishery operators are worried because daily landings have averaged only about 100 tons, and only a few days over 200 tons, and this on top of a mediocre summer albacore season. Ex-vessel prices are holding at a high level, with an average skipjack price for June 1960 of 88 yen a kilogram (US$223 a short ton), just about double last year's price. (The Suisan Keizai, July 20, 1960.)

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SINGAPORE BASE FOR EXPORT OF TUNA TO U. S. PLANNED:

On July 14, 1960, the Japanese Export Tuna Freezers' Association expected to confer with responsible officials of the Japanese Fisheries Agency and the Ministry of Agriculture and Forestry on the question of establishing a base at Singapore. The main object of the base will be for transshipments, to facilitate exports to the United States. The project has been under examination for a long time. (The Suisan Keizai, July 10, 1960.)

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JAPANESE BUILD MORE TUNA VESSELS:

The Japanese Fisheries Agency on July 19, 1960, announced granting of construction permits for 28 new fishing vessels, including 8 tuna vessels. Gross tonnages of the tuna vessels were 387, 279, 308, 299, 309, 339, respectively, and two 99-tons. (The Suisan Tsushin, July 21, 1960.)

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CANNED SALMON PACK OUTLOOK FOR 1960:

The canned pack of pink salmon for export by canners of Hokkaido and northeastern Honshu, Japan, including land packs of the mothership companies, is expected to be somewhat more than 700,000 cases (full-case conversion 350,000 cases, probably 48 1-lb.-can cases). However, pink and chum packs on the North Pacific factoryships were reported in mid-July to be unexpectedly low, and there are strong indications that consignments to the Japanese Canned Salmon Joint Sales Company (which handles export sales) this year will be only about 1.35 to 1.4 million cases (last year they were about 2.31 million cases).

Japan (Contd.):

Factoryship pack of chums was expected at first to be about 270,000 cases (of which about 150,000 cases would be for the domestic market), but the price of fresh and salted chums has been extremely high and canned production has been given secondary consideration. Furthermore, the fact that the export price is lower than the domestic price has helped to hold the pack of chums for export to around 60,000 to 70,000 cases.

The fishing season for pinks was expected to be at its peak in mid-July, but the catch was unexpectedly poor. Around 250,000 to 300,000 cases (of which 50,000 cases will be for the domestic market) will be all that will be packed. If North Pacific mothership salmon fishing is continued right up to the end of the legal season, it is expected that production of silvers may be higher than last year, but even so informed sources believe that mothership packs of canned salmon for export may amount to only 1 million to 1,050,000 cases. (The Suisan Tsushin, July 20, 1960.)

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HIGH PRICES FOR FROZEN SALMON RESTRICT MARKETING:

Japanese salmon dealers (there are about 120) in the Tokyo Central Market say that because of the drastic decline in salmon receipts and very high prices, fresh and frozen salmon has completely lost its marketability. There is a little fish coming into the market from the salmon mothership fleets. As of the end of June the price had not been settled between the mothership operators and the fishermen and, as a result, speculation kept the price so high that middlemen could not handle the fish. Prices for salmon from the eastern Hokkaido land-based fishery continue much higher than last year. (The Suisan Tsushin, June 28, 1960.)

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MOTHERSHIPS PAY HIGHER PRICES FOR SALMON IN 1960:

The Japanese salmon mothership operators and the catcher boat operators came to an agreement on salmon prices for this season. Agreement was reached on July 19, the 70th day since the beginning of their negotiations. The agreement was for a 20-percent increase in prices. In addition, the mothership operators are to pay for each catcher boat "cooperation money" in the amount of 120,000 yen (US$333.50). (The Suisan Keizai, July 20, 1960.)

Prices Paid by Japanese Motherships for Salmon, 1958-60

Species	1960		1959		1958	
	¥/Fish	US¢/Fish	¥/Fish	US¢/Fish	¥/Fish	US¢/Fish
Red . . .	396.00	110.0	330.00	91.7	300.00	83.3
Chum . .	165.60	46.0	138.00	38.3	125.00	34.7
Pink . . .	99.60	27.6	83.00	23.1	75.00	20.8
Silver and king . .	139.20	38.6	116.00	32.2	205.00	56.9

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NORTH PACIFIC MOTHERSHIP SALMON FISHERY TRENDS, EARLY JULY 1960:

The Japanese North Pacific salmon mothership fleets, which had poor fishing early in the season because of stormy weather and a scarcity of pink salmon, as of early July 1960 got into the peak of their season. Catches picked up, and on the average the 12 fleets had taken about 70 percent of their catch quotas. It was considered almost certain that the motherships which were doing best would finish their quotas as early as July 25, with the slowest fleets making their full quotas and leaving the fishing grounds before August 10, the closing date set by the Soviet-Japanese fishery treaty.

Early in July the motherships Kizan, Kyoho, Shinano, Chiyo, Koyo, Miyajima, Jinyo, Eijin, Otsu, and Kyokuzan were fishing on grounds near Kamchatka, while Shoei and Kashima were fishing the more northerly grounds toward the Olyutorski area. In general, fishing was good for reds, chums, silvers, and chinook, and poor for pinks.

The fact that some vessels would end their fishing as much as 15 days ahead of the treaty closing date is due in part to the reduction of the total mothership catch quota from 100,000 metric tons in 1957 to about 54,000 tons this year, with each fleet's quota reduced proportionately.

The 33 salmon boats from the Ishinomaki area of northeastern Japan which were participating in mothership fleet operations in the North Pacific were expected to stop fishing early in August. According to reports to the Ishinomaki radio station, when they entered the Bering Sea fishing was poor and they had to move around a great deal in search of fish and were unable to fish long in any one area. Early in July they moved westward, following the red salmon, and almost all of the fleets reported good fishing.

Japan (Contd.):

Export canners of the Ishinomaki district of northeastern Japan early in July had begun working on large shipments of North Pacific salmon, but it looks as if their production will be down from 20 to 40 percent, because of the cutback in the salmon catch resulting from the Soviet-Japanese fisery negotiations. Therefore, canners in Ishinomaki and Onnagawa are saying that they cannot break even unless the Canned Salmon Joint Sales Company's price for export to the United States is 20 or 30 percent higher than last year. Last year's price for a case of 96 No. 3 cans containing 110 grams (about $3\frac{3}{4}$ ozs.) was 7,800 yen (US$21.68), but this year they are hoping for 8,200 to 8,500 yen (US$22.80-$23.63). Also, since last year the female cannery workers of the Ishinomaki district have been covered under a minimum wage system and are getting at least 165 yen (US$0.46) a day. (The Suisan Keizai, July 10, 1960.)

Note: Also see Commercial Fisheries Review, July 1960 p. 56.

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NORTH PACIFIC MOTHERSHIP SALMON FISHERY TRENDS AS OF JULY 25, 1960:

The Japanese North Pacific salmon mothership Koyo Maru (7,658 tons gross), which has been fishing in the Aleutian area, reported to the Hakodate office of its owners on July 24, 1960, that it had filled its catch quota of approximately 4,200 metric tons and ceased fishing operations. The mothership departed the fishing grounds on July 23 and was expected to reach Hakodate around July 30.

The number of days of fishing this year for the North Pacific salmon motherships was normal, but the catch quota allocations were cut back, and there were severe limits on areas of operation. Pink salmon fishing was poor, because of limitations on net mesh size, but red salmon fishing was reported to have been good. It looked as if the mothership fleets would complete their catch quotas and leave the fishing grounds before the end of July. As of July 10, it was reported that daily salmon catches were about 80 tons for each fleet. As of July 16, the 12 salmon mothership fleets had caught 44,262 metric tons of fish (3,698.5 metric tons average per fleet), leaving less than 10,000 tons to go in their catch quota of 54,000 tons. By species, the catch was (in tons): reds 17,168; chums 23,991; pinks 2,344; silvers 324; chinooks 435. (Suisan Tsushin, July 19, and Keizai Shimbun, July 25, 1960.)

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CANNERS EAGER TO BUY FROZEN ALASKA SALMON:

The drastic cut in the catch quota imposed by this year's Japan-Soviet fisheries conference and the scarcity of salmon this season in the waters on the Asian side of the North Pacific have resulted in the Japanese salmon packers being short of fish to keep their canneries busy and their foreign customers supplied. In an unprecedented move to make up this shortage, Japanese salmon packers are attempting to import frozen red salmon from Bristol Bay, Alaska, where the fish were expected to be considerably more abundant this season than they have been in the past several years.

The first public reports of such projects came on July 4, 1960, when the Tokyo fisheries trade press announced that one Japanese food company had been granted by the Ministry of International Trade and Industry a foreign exchange allocation of US$2,420,000 for the purchase of 3,000 tons of frozen red salmon from the United States to be processed in a Hokkaido cannery into approximately 150,000 cases of canned salmon. On July 14, it was reported that the Japanese company's example had been followed by a large Japanese fishing company and a trading firm, which had filed applications for approval of imports of 1,000 tons and 1,500 tons, respectively, of frozen Alaskan red salmon. The trading firm reportedly expected to pay about US$800 a ton c.i.f. for the salmon.

There is no indication that any of these would be importers have located a firm source of supply for the fish. With the fishing season in Bristol Bay almost over, there is little time for maneuvering, and the Japanese industry does not appear to be particularly hopeful about its chances of getting any considerable amount of Alaska red salmon to process this year. (United States Embassy, Tokyo, dispatch of July 14, 1960.)

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FISH SCRAP PRODUCTION ESTIMATED FOR 1960:

The Japanese Fisheries Agency estimates that the production of fish-press scrap in Japan for 1960, excluding mothership fish meal and whale meal, will total 113,500 metric tons.

Japan (Contd.):

The breakdown is as follows (in metric tons): body scrap--saury 38,400; sardine 5,000; sand launce 3,300; yellowtail 2,000; mackerel scad 6,000; larval anchovy 4,000; miscellaneous whole fish scrap 6,600; total whole fish scrap 65,300. Fish waste scrap, 41,900. Other fish scrap 6,300. Adding 45,000 tons of fish meal produced on factoryships and 24,000 tons of whale meal, it is estimated that the total Japanese production of fish scrap and meal this year will amount to 182,500 metric tons. (The Suisan Tsushin, July 12, 1960.)

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FISH-MEAL PRODUCTION IN BERING SEA OVER 25,000 TONS:

As of July 18, 1960, the four Japanese fish-meal factoryship fleets operating in the Bering Sea had made a total of 23,716 metric tons of fish meal. In addition, the Tenyo Maru had produced 1,863 tons, making a combined total of 25,579 tons of meal. Production by each fleet as of July 18 was:

Gyokuei Maru: 5,519 tons of meal, 1,215 tons of solubles, 120 tons of fish oil, 1,962 tons of frozen products.

Soyo Maru: 4,693 tons of meal, 1,505 tons of solubles, 166 tons of fish oil, 5,691 tons of frozen products.

Kinyo Maru: 6,812 tons of meal, 835 tons of solubles, 151 tons of fish oil, 63 tons of salt cod, 121 tons of frozen products.

Renshin Maru: 6,692 tons of meal, 1,768 tons of solubles, 125 tons of fish oil, 2,432 tons of frozen products.

In addition, the Tenyo Maru has made 1,863 tons of meal, 9.64 tons of liver oil, 300 tons of fish oil, and 1,752 tons of frozen products.

Since there are 14,013 tons of meal available in Japan, and in view of the market conditions and the high domestic demand, it appears that there will be no exports, and all of the meal will be consumed within Japan. (The Suisan Keizai, July 22, 1960.)

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DISTANT-WATER TRAWLING PLANS OF FIVE BIG FISHING COMPANIES:

The Japanese trawl fishery in distant waters is marking a new development in the Japanese fishing industry. The five large Japanese fishing companies are pushing construction of large trawlers. During this year the first stage of their plans will be completed, and they will be sending trawlers of 1,500 tons, 1,800 tons, and 2,000 tons gross to catch bottom fish off New Zealand, Australia, and the east and west coasts of Africa.

Vessels capable of operating as of mid-July 1960 total 5. There are 7 big trawlers under construction. This means that before this year is over there will be 12 large trawlers heading for the African and New Zealand grounds. It is anticipated that they will land about 8,000 tons of red bottom fish (probably snappers) for the Japanese domestic market annually, and about 4,000 tons abroad. Among the various kinds of "snappers" which these vessels will land, not all are in high demand in foreign markets. In addition to about six species of snapper-like fish, the boats will catch tongue sole, gurnards, cuttlefish, groupers, croakers, and other bottom fish. Some are suitable for export and some are not, and this will have to be taken into consideration in planning operations exclusively for foreign markets. Fortunately, the demand for red bottom fish abroad is strong and promises to develop further in the future. However, snappers also enjoy a good demand in Japan, and it may be more profitable to sell them on the domestic market. At any rate, the Japanese Fisheries Agency, in its next year's budget requests for distant-water trawling is talking in terms of licensing 25 such vessels in the next fiscal year, and so this fishery is attracting much attention as the "wave of the future" of the Japanese fishing industry.

Of the five companies engaged in distant-water trawling, the first has the No. 62 Taiyo Maru and No. 63 Taiyo Maru (each of 1,570 tons gross) operating on the east and west coasts of Africa. The No. 62 Taiyo Maru began fishing June 4 and was scheduled to return to port September 15. The No. 63 Taiyo Maru began fishing June 22 and was expected to return to its base next year. This same company has two 1,870-gross-ton trawlers building in the company's Hayashikane Shipyard, the first of which was launched early in July. Both vessels were expected to be completed before the end of this year and are scheduled to sail to the African coast late in November.

The two 1,570-ton boats were scheduled to return to port after one trip, with about 1,800 tons of bottom fish. Depending on the demand for their catch in Japan, both of them may fish exclusively for the domestic market. For this reason they are not equipped with filleting machines. The two 1,870-ton vessels will fish for export, landing about 5,000 tons of fish a year in Greece and other European countries as fillets, fish-sticks, and in the round.

The second of the five companies has two trawlers, the Uji Maru and the Asama Maru, fishing off Argentina and landing their catches to that country. The company has a large trawler, the Tenjo Maru (2,250 tons gross) under construction. The sched-

Japan (Contd.):

ule called for her launching July 23, completion in September, and sailing for her maiden trip late in October. The Tenjo Maru, built at a cost of 530 million yen (US$1,484,000), is the largest Japanese trawler--78 meters long (256 feet), with a beam of 13.5 meters (43 feet), a cruising speed of 14 knots from a 2,400-hp. Diesel engine, and a carrying capacity of 2,150 metric tons. Her maiden voyage was expected to be to the east coast of Africa. Operating plans call for two trips a year, with 100 days of fishing producing 1,500 metric tons of fish per trip for an annual total of 3,000 tons of "redfish" or snappers, all of which will be sold on the Japanese domestic market.

In view of the increasing demand in Argentina and in European countries for snapper species, some thought is being given to increasing the production of the Uji Maru and the Asama Maru.

The third of the five companies is building a 1,500-ton trawler at the Niigata Iron Works, which is slated for completion within the year. At first it was planned to build two such vessels, but the plan for the second has been changed to a 2,300-ton vessel, which will operate as a frozen whale-meat carrier in the Antarctic beginning next season. In the summer, the vessel will trawl off the African coasts. The 1,500-ton trawler will fish for export off New Zealand, and will export about 3,000 metric tons of fish annually to various European markets. The 2,300-ton vessel will fish off Africa, but will bring back slightly less than 3,000 tons of fish for the domestic market when it returns to Japan before the Antarctic whaling season.

The fourth of the five companies is building two 1,500-ton trawlers at Mitsubishi's Shimonoseki yards. One will be built this year and the second next year. Both vessels will fish off Africa, but the company is also thinking of using them for cod, halibut, and flounder in northern waters. The first vessel to be completed will be sent to Africa and its catch will all be exported to Europe.

The fifth company has chartered from a large Japanese fishing company the 1,000-gross-ton tuna long-liner Seiju Maru and is having her converted to a trawler at a Shimonoseki yard. The vessel was expected to sail from Tobata at the end of June 1960 to engage in trawling off northwestern Africa. Of the Seiju Maru's catch, 80 percent will be exported in the round to Europe and 20 percent will be filleted and shipped to the United States. The operators have been surveying the European market for red bottom fish (snappers), and have found acceptance very good.

This same company has been operating the trawler Tatsuta Marie off Northwest Africa. Her recent catches of "red fishes" or snappers were well received in Japan, showing that there is a high demand for this type fish.

A sixth company also is reported having plans to construct a 1,500-ton trawler in about a year. (Suisan Keizai, July 17, July 12, and June 25, 1960.)

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OYSTER-FREEZING PLANT BUILT WITH U. S. TECHNICAL AID COMPLETED:

On June 6, 1960, a large Japanese fishing company held ceremonies marking completion of the first plant in Japan designed for production of fresh-frozen oysters for export. The Hiroshima plant was planned and equipped under a technical agreement with a United States firm. Thus it will be possible for the first time to export to the United States raw Hiroshima oysters, which up to now have been sold mostly in the Japanese market. In addition to the frozen raw oysters, the Hiroshima plant will develop into a general food processing factory with canning and sausage-making departments.

The three main points about the freezing installations that have resulted from the technical partnership with the United States company are:

(1) Freon is used as a refrigerant in industrial quick-freezing for the first time. Generally in Japan for large-scale quick-freezing, ammonia is used as the refrigerating agent.

(2) By using unit coolers, the air-blast system is employed throughout for freezing and cold storage. Temperatures in the freezing rooms can be brought as low as -30° F., and the oysters are frozen while still loaded on special transporting buggies. The unit coolers and all the other latest types of machinery, such as water coolers, the air conditioning, and the all-automatic ice machine, can be controlled and operated from a central control panel.

(3) Shucking of the oysters is done on a new type of installation. For the first time in Japan oysters will be shucked with knives on installations called "bunkers." The shucking tables and the floors are all of terrazzo, and the concrete that is used is of a type that will not crack and produce crevices in which germs can grow. Containers for the oysters are of stainless steel, washing is done with chlorinated water, and sterilization is complete, so that every effort has been expended on hygienic details.

The main parts of the plant are the oyster-processing plant, the refrigeration plant, the cannery, the ice plant, the boiler room, the sanitation control room, and the offices. The total area is about 9,496 square yards. The plant is able to (1) freeze 36 tons a day of oysters or shrimp, (2) store 600 tons of frozen products, (3) make 20 tons of ice a day, (4) can 2,000 cases per day, and (5) make 20,000 sausages a day. (Suisankai, June 1960.)

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AUSTRALIAN RED SNAPPERS ON TOKYO MARKET FOR FIRST TIME:

The Tokyo fish market received on July 20, 1960, about two carloads of tropical red snappers, the first such shipment this year. The fish were caught off Australia by the 500-gross-ton trawler Shinano Maru. Up to now such fish have been marketed mostly in western Japan, but the dealers expect to develop a considerable market for them in Tokyo. Another trawler from the Australian grounds, the Ikoma Maru, was expected to return in August. (The Suisan Keizai, July 20, 1960.)

Kuwait

DEVELOPMENT OF OFFSHORE FISHERIES UNDER CONSIDERATION:

Within the past year there have been several developments in the fishing industry of Kuwait. The most important one seems to have been that certain Kuwaiti merchants and shaykhs have been able to convince the Ruler of Kuwait that modern commercial fishing in the Persian Gulf will not be detrimental to the native fishermen and the Ruler has granted the merchants permission to engage in modern commercial fishing.

In the fall of 1959 a New York City firm sold fishing boats to a Kuwaiti merchant and supplied him with United States captains and crews. The Kuwaiti immediately embarked on an ambitious shrimp-fishing enterprise. Shrimp are caught, cleaned, and frozen on board the trawlers and then are delivered to freight ships for delivery to the New York City partner of the Kuwaiti for sale in the United States. This arrangement has proved profitable in the one-half season of operation. The fish, which are caught incidental to the shrimp operation, are sold on the local market at prevailing prices. There has been no corresponding reduction in price as a result of this activity as the Ruler himself has specified that native fishermen are not to be undersold. However, Kuwaiti citizens have benefited by a selection of fish generally larger than previously and by more regular supplies.

Another potentially important development has been the interest of one of the major Kuwaiti shaykhs in organizing a large Kuwaiti fishing fleet designed to operate not only in Kuwait waters but throughout the Persian Gulf. The shaykh's interest seems to have been inspired by a young Sudanese entrepreneur, who has been sent by the shaykh to investigate fishing opportunities throughout the Gulf. The Sudanese has just presented a report to the shaykh on his findings.

After reviewing the primitiveness of present-day fishing and the relatively small catches, the Sudanese points out that fishing nevertheless is quite profitable in the Gulf. Indeed, fishermen along the West coast of the Persian Gulf and the Gulf of Omah are able to export some quantities of dried fish. His conclusion is that scientific fishing in the Gulf, using local labor, could yield large quantities of fish and be capable of supplying a substantial export market.

The Sudanese in his report proposes setting up a fishing company in Kuwait which would own a fleet of trawlers and also buy the catch of local fishermen. The fish would be cleaned, frozen, and exported to other Arab countries or to Europe or the United States via merchant ships or by trading trucks operating between Kuwait and the states of eastern Mediterranean. He proposes furthermore building a fish cannery in Kuwait, a fish meal plant to use industrial fish and waste products from the fish processing. He also would build a plant for smoking fish and one for extracting oil from sardines and shark livers. The Kuwaiti Shaykh and his Sudanese partner do not intend to operate the fleet themselves, but wish to enter into partnership with a foreign firm which would organize and operate the fishing fleet, build and operate the factories, and use its connections to dispose of the products. The Kuwaiti would probably do little more than supply the capital.

The shaykh also wishes to bring a professional ichthyologist to the Persian Gulf to conduct a scientific survey of the quantities and types of fish available and the size of the maximum sustained catch which would not deplete the fish supply. It is hoped that a United States firm or educational institution will be able to conduct this survey. It would benefit not only Kuwait, but all the riparian states.

An article in a Kuwait magazine claims that there are about 400 kinds of fish found in the Persian Gulf. It lists the primary edible fish as follows: zubaidi, sheem, nuwaibi, nagrour, biah, meed, sabiti, hamour, sha'am, hamman, shimahi, tabaglazag, shabamba'a, sabour, and khafaf. It also lists a number of fish which are found in the Gulf but which cannot be eaten, as well as a number of poisonous or harmful fish. The article states that one important aspect of Persian Gulf fish is the fact that there are very few brightly colored types. Most are light or dark gray, white, silver, light blue, or light red, whereas fish of the Red Sea and the southern Arabian peninsula are brightly colored.

In the section on present day fishing in Kuwait the article states that most fish are caught in the spring and the summer. It also says that the best fishing is "between the 11th and 18th of every lunar month, i.e. when the tides are strongest." The nets then are anchored and the tide sweeps the fish into them. (United States Consul in Kuwait, July 14, 1960.)

Note: Also see Commercial Fisheries Review, August 1960, p. 61.

Liberia

REGULATIONS ISSUED FOR MARINE AND INLAND FISHERIES:

The Liberian Department of Agriculture and Commerce has published the first detailed maritime and inland fishing regulations to go into effect in Liberia. These regulations follow:

(1) Establish mandatory license fees for commercial fishing vessels ranging from $150 for trawlers to $5 for native canoes, but exempt subsistence fishermen and persons under sixteen "who are not required to have license to fish."

Liberia (Contd.):

(2) Authorizes the Bureau of Fisheries to prohibit fishing gear harmful to fishery resources and particularly prohibits dynamiting.

(3) Authorizes the Bureau of Fisheries to close any fishing zone because of overfishing resulting from use of certain types of fishing gear.

(4) Establishes mesh regulations.

(5) Requires monthly reports from commercial fisheries, with respect to area of catch, tonnage, gear used, value of catch, and species of fish caught.

Although enforcement may prove to be a problem, these regulations represent a useful first step toward better management of Liberia's fisheries resources. They should also be helpful in developing, over a period of time, more accurate information on the extensive, but inaccurately charted coastal fisheries resources of the country. (U. S. Embassy in Monrovia, June 26, 1960.)

Malaya

TUNA VESSELS ASSIGNED TO MALAYA:

The Japanese Overseas Fisheries Company signed contracts for two 100-ton tuna vessels from Kochi Prefecture to proceed to Penang, Malaya, the latter part of July 1960. Negotiations were being carried on for another two vessels, which were scheduled to sail in August. The company already has under charter one vessel, which is being used jointly with a Ceylonese company. (The Suisan Tsushin, July 8, 1960.)

Mexico

CARMEN-CAMPECHE AREA SHRIMP LANDINGS AND EXPORTS, OCTOBER-DECEMBER 1959 AND JANUARY-MARCH 1960:

Total landings (estimated from all available sources) of shrimp at Mexico's Gulf Coast ports of Campeche and Carmen in the fourth quarter of 1959 were about 2,535 short tons. About 1,750 tons were landed at Carmen and 785 tons at Campeche. Estimated percentages by species were 57 percent pink, 8 percent brown, and 35 percent white in the Carmen area and 84 percent pink, 5 percent brown, and 11 percent white in the Campeche area.

Total landings of shrimp at those two ports in the first quarter of 1960 were about 1,479 short tons of which 1,071 tons were landed at Carmen and 408 tons at Campeche. Estimated percentages by species were 42 percent pink, 13 percent brown, and 45 percent white at Carmen and 80 percent pink, 6 percent brown, and 14 percent white at Campeche.

A small portion of the Campeche-Carmen area landings is marketed domestically and is made up principally of culls and small shrimp. No figures by size or species are available because it is not possible to determine the disposition made of the quantities consumed locally or included in domestic shipments. It is generally estimated that the domestic consumption does not exceed 10 percent of the tonnage landed.

During the last quarter of 1959, a total of 2,191.7 short tons (statistics from the Fishing Office--Oficina de Pesca) were shipped to the United States--1,644.3 tons from Carmen and 547.4 tons from Campeche.

During the first quarter of 1960, a total of 1,344.9 short tons of frozen shrimp were shipped to the United States--973.8 tons from Carmen and 371.1 tons from Campeche. Except for a few hundred pounds, all exports go to the United States.

Other fishery products exported from the Carmen-Campeche area to the United States during the last quarter of 1959 included 206,000 pounds of frozen fish, 2,293 pounds of shark fins, and 9,731 pounds of shark skins. During the January-March 1960 quarter other exports included 192,986 pounds of frozen fish, 3,395 pounds of shark fins, and 14,204 pounds of shark skins. (United States Consulate, Merida, June 22, 1960.)

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SHRIMP INDUSTRY TRENDS, JUNE 1960:

What in late May looked like the beginning of an early rainy season fizzled out. As a result, prospects for another record year for Mexico's west coast shrimp fishery are less promising.

Mexico (Contd.):

The trend towards peeling and deveining of shrimp in the Gulf of Mexico in the Carmen-Campeche are is on the increase. Reports from various industry sources indicate that current shrimp exports from that area are about 80 percent or more peeled and deveined.

The Carmen-Campeche "price war" over independent boats continued into July, although the only increase between May 19 and July 5 was in the price of white shrimp which was increased one cent a pound across the board. To discourage landings of small shrimp, prices on 66-and-over count shrimp were dropped from 26 to 18 cents a pound. No changes in Salina Cruz (west coast) ex-vessel prices were reported recently.

Ex-vessel prices in U. S. cents a pound for independent vessels at Carmen and Campeche for white shrimp as of July 5 were as follows: under 15 count, 81; 15-20 count, 76; 21-25 count, 71; 26-30 count, 66; 31-35 count, 59; 36-40 count, 49; 41-50 count, 44; 51-65 count, 37; and over 65 count, 18. Ex-vessel prices for pink and brown shrimp were one cent a pound under the white shrimp price except for the over-65 count which was also 18 cents.

As expected at this time of year, landings at Salina Cruz on Mexico's west coast dropped off somewhat. Vessels were reported landing one to two tows per trip of 12 to 14 days. Landings at Carmen and Campeche picked up during June with vessels averaging around 1,300 to 1,500 pounds per trip in each place. At Carmen during the first half of the month, landings were mostly pinks and browns, but during the last half whites predominated, followed by pinks and a few browns. At Campeche landings averaged about 80 percent pinks during June. During the first half of June the remainder was about equally divided between whites and browns, but during the last half whites accounted for about 20 percent with only a scattering of browns.

Sizes at Carmen were fairly uniform throughout the month, averaging about 35 percent 30 count and under. Sizes at Campeche tended to decrease as the month progressed. During the first week landings were running around 75 percent 30 count and under and during the last week about 60 percent of the landings were of those sizes. (United States Embassy, Mexico, report of July 7, 1960.)

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THIRD SHRIMP-BREADING PLANT ESTABLISHED:

The third shrimp-breading plant for Mexico was scheduled to start operating in the Pacific Coast port of Salina Cruz, Oaxaca, about mid-June 1960. But a July 5 report indicates that although all equipment has been installed, the plant was still operating only on a trial basis and training workers. It is reported that the plant will have a capacity of about 5,000 pounds of breaded shrimp (finished product) per 8-hour shift. In addition to breading, the plant will produce individually-frozen peeled and deveined raw shrimp.

When the plant is in full operation, Mexico's daily capacity for producing breaded shrimp in all three plants will be about 15,000 pounds in 8 hours. Of the three plants one is located in Puerto Mexico, Veracruz, and two in Salina Cruz., according to a June 3, 1960, dispatch from the United States Embassy in Mexico City.

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ENSENADA FISHERIES TRENDS, APRIL-JUNE 1960:

During the second quarter of 1960 landings of fish and shellfish in the Ensenada area of Mexico's west coast were down and many cannery workers were unemployed. Early reports from the abalone fishery indicated catches lower than anticipated, but with several months remaining in the abalone fishing season, catches could pick up.

There have been discussions between various groups of fishermen and a Federal Deputy concerning the failure of fishing cooperatives and alleged exploitation of fishermen. The Deputy promised to ask the Mexican Chamber of Deputies to study the possibilities of returning to free fishing, according to a June 23, 1960, report from the United States Consulate in Tijuana.

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FISH MEAL AND OIL INDUSTRY:

Mexico has 15 fish-meal plants and one plant producing solubles. Of the meal plants only two are in more or less constant operation. The remaining plants are either shut down or are connected with canneries and only operate when fish and fish waste are available. Only four plants can be considered to have modern equipment. One of these produces only solubles and liquid fish. Another, designed for producing fish flour by the azeotropic process, has never been operated. One of the modern meal plants, located in Ciudad del Carmen, has a capacity of 10 tons of raw fish an hour and the other, in San Blas, Nayarit, can handle but one ton.

Mexico (Contd.):

The other plants have old secondhand machinery, mostly purchased from plants in California, and practically all use direct-flame dryers. In this group only one plant is known to have centrifuges for separating the oil. The others use settling tanks.

If all plants were in operation, the total capacity would be 110 to 115 tons of raw fish an hour or about 180 tons of meal per 8-hour day, providing fish were available.

No new plants are being planned at this time. The present world price of meal is a decided deterrent.

The Mexican plants produced an estimated 2,000 to 3,000 metric tons of meal in 1959. The 1960 production should be considerably higher since the Carmen plant is now producing around 600 tons a month. In addition to the meal produced by the plants, there are 1,200 to 1,500 tons produced by sun-drying trash fish and scrap. Along the West Coast the fish are boiled and then laid out on the ground in the sun to dry. In Yucatan the scrap from a filleting plant is sun-dried without previous cooking. The dried fish are then pulverized in small hammer mills to make the meal.

The quality of the Mexican meal, as can be expected from the varying sources of supply and processing techniques, varies considerably. The meal sources for the Baja California plants come mostly from waste from California sardines and Pacific and jack mackerel with some waste from tuna and yellowtail. The West Coast sun-driers use 50 or more different species of fishes taken by shrimp trawlers and by weir fishermen. The San Blas plant uses trash fish caught with shrimp trawls and it also processes sharks and turtles. This is the only plant in Mexico that introduces solubles from concentrated stickwater into the meal. The Carmen plant uses mostly anchoveta (Cetengraulis edentulus), but some menhaden and other fish are also processed.

The sun-dried meal is the poorest quality because the protein content usually runs between 40 and 50 percent.

Table 1 - Analyses of Three Samples of Plant-Produced Fish Meal

Product	Sample 1	Sample 2	Sample 3
	(Percent)		
Moisture	8.80	6.3	9.72
Protein	63.50	66.6	62.63
Fiber	0.96	0.3	-
Ash	14.90	22.1	-
Fats	9.06	8.4	9.80
Nitrogen free extract	2.78	-	-
Chlorine	-	-	1.59
Nitrogen	-	-	10.02

From various reports, oil recovery runs between 2 and 8 percent. The average is probably around 3.5 to 4.0 percent. Mexican fish oil is all used locally. Most of it is used in the paint and tanning industries. The oil from the trawl-caught trash fish is reported to be quite high in stearines.

Generally the producers sell their oil at a fixed price and do not concern themselves with any analysis. One sample of Mexican fish oil was reported to have the following characteristics: pounds per gallon, 7.71; specific gravity, 0.925; color--Gardner 1933, No. 10; iodine number, 160; acid number, 1.59; and refraction index, 1.481.

Only two plants produce fish solubles in Mexico. The meal plant at San Blas concentrates the stickwater to about 40-percent solids and then adds it to the meal in the dryer. The production of this plant is quite small since it can handle only one ton of raw fish per hour.

In Ensenada one plant is dedicated solely to the production of fish solubles. Its capacity is reported to be about 5,000 gallons of 50-percent solubles per day. The plant has modern three-phase equipment for producing solubles. In addition this plant has two retorts capable of liquifying about 5 tons of fish waste per day. No additional enzymes are needed for liquifying the fish. The liquified fish are mixed with stickwater and processed to produce 50-percent solubles. The entire production of solubles is exported to California.

The millers who buy sun-dried fish usually pay 1.00 peso (8 U.S. cents) per kilo of dried fish, which after milling and bagging or sacking they sell for 1.50 pesos (12 U.S. cents) a kilo. Paper bags holding 25 kilos of meal cost 65 centavos (US$0.052) and cloth sacks holding 50 kilos cost 2.80 pesos (US$0.224) each.

Around Ensenada, most canneries own their own boats and reduction plants and the waste from the canneries is processed for meal and oil as a byproduct of canning. One company figured that sardines and mackerels caught by company-owned boats cost US$40 per metric ton. It was reported that independent boats were receiving 400 pesos (US$32) per metric ton of sardines and mackerel. If the fish are unsuited for canning, only 65 percent of this price is paid.

The plant at Carmen pays 200 pesos (US$16) per metric ton of fish. This plant estimates its cost for meal, delivered in Mexico City, to be about 2,200 pesos ($176) per metric ton.

The boats at San Blas, Nayarit, are company-owned and no separate accounting is kept of fish cost.

The Mexican Government, as an aid to feed producers, has restricted the importation of manufactured feeds. This has resulted in a considerable increase in the demand for fish meal by the feed producers. This restriction caused an upsurge of interest in fish-meal plants which quickly died out owing to the low price of Peruvian meal. On July 8, 1960, Peruvian meal was being offered in Mexico City at 1,637.50 pesos (US$131) per metric ton. All Mexican meal producers are complaining of their inability to compete at those prices.

The Ensenada meal producers, who normally sell most of their product in the United States, are unable to compete with Peruvian prices either in the United States or Mexico. Freight and handling charges from Ensenada to the feed-producing plants are reported to be between US$25.00 and $30.00 per metric ton.

Import permits are not required on fish meal, but agricultural sanitary permits are. Import duties amount to US$19.776 per metric ton.

In the production of meal, the Government as a severance tax charges 40 pesos ($3.20) per metric ton of fish.

Import permits are required for fish oils. Import duties vary with the size of the container.

In containers weighing 50 kilos or less, the duty is 25 centavos per gross kilo plus 20 percent ad valorem. The official price for determining the ad valorem duty is 8.80 pesos per gross kilo.

In containers larger than 50 kilos, the specific duty is 25 centavos per gross kilo and the ad valorem is 7 percent. The official price is 6.30 pesos per gross kilo.

In tankers or tank cars, the specific duty is 20 centavos per net kilo and the ad valorem is 18 percent based on an official price of 5 pesos per net kilo.

In addition there is a port tax of 3 percent of the value of the import duties.

Mexico (Contd.):

Other than import duties and restriction on the importation of manufactured feeds, the Government has given no assistance to fish-meal producers. Something may be done in the near future because of the complaints of the local fish meal producers.

The Carmen plant does not now save the stickwater but plans have been made to install a concentration plant so that the condensed solubles can be added to the meal.

An organization in Mazatlan is consulting with an English concern in an endeavor towards developing equipment that will permit partial processing of trash fish aboard shrimp trawlers. If such equipment can be developed satisfactorily, the shrimp fleet should be able to supply most of Mexico's fish-meal needs.

Under present world prices for fish meal, it is highly improbable that there will be any expansion in fish-meal production in Mexico in the immediate future unless the Government does something to assist the local industry.

When and if the price situation becomes rectified, it is probable that Mexico eventually will become self-sufficient with respect to both meal and oil. This day, however, is not in the immediate future. It seems very likely that some technique will be developed before long which will permit partial processing aboard shrimp boats. When this day arrives, Mexico can become self-sufficient and perhaps even enter the export market. Until then it is not likely that Mexico will be in a position to supply her own demands. (United States Embassy, Mexico, report of July 18, 1960.)

Netherlands

ANTARCTIC WHALE CATCH, 1959/60 SEASON:

The Netherlands Minister of Agriculture reported on July 6, 1960, that the Netherlands Antarctic whaling expedition caught slightly less than 6.7 percent of the total blue-whale units taken during the 1959/60 pelagic whaling season. The Netherlands catch in the 1959/60 season was 1,037 out of the 15,512 blue-whale units taken by all nations. In the 1958/59 season, the catch was 965 out of the total of 14,300 units, or slightly over 6.7 percent. The Minister reported that the Netherlands whaling expedition operated during 1959/60 season for 121 days, as compared to 102 days fixed by the International Whaling Convention for member countries. The Netherlands and Norway were not parties to the Convention in 1959/60. (United States Embassy in The Hague, July 12, 1960.)

New Hebrides

JAPANESE BASE TO EXPORT FROZEN TUNA TO FRANCE:

The Japanese trading company operating the tuna base in the New Hebrides in July 1960, recently applied to the Japanese Fisheries Agency to increase from 8 to 12 the number of tuna boats based at Espiritu Santo. That base has been exporting to the United States about 3,500 tons of frozen tuna a year, and this year for the first time the French Government granted the right to export annually 1,000 tons of tuna (or tuna products) to France. (The New Hebrides is a British-French joint dominion, and the French Government has in the past prohibited the import of tuna from other than French territories.)

Since there is little probability that the 8 boats operating out of the base could fill the quota for export to France, the application for an increase in the fleet was made. If the increase is granted and the 1,000-ton quota is filled this year, it is considered possible that the quota may be increased in the near future. Already this year about 300 tons of tuna from the Espiritu Santo base has been shipped to France, where the price is the same as in Italy. (The Suisan Tsushin, July 21, 1960.)

New Zealand

EXPORTS OF FISH-LIVER AND WHALE OIL, 1959:

In 1959, New Zealand exported 272,655 Imperial gallons of marine-animal oils--97.2 percent whale oil and 2.8 percent fish-liver oils. The fish-liver oil exports accounted for 41 percent of the total value, however, due to their relatively higher value--US$16.03 per Imperial gallon as compared with US$0.68 a gallon for whale oil. (U. S. Foreign Agricultural Service Report, Wellington, April 22, 1960.)

New Zealand's Exports of Marine-Animal Oils, 1959

Type and Destination	Quantity	Value	
	Imperial Gallons	£NZ	US$
Fish Liver Oil: 1/			
United Kingdom	4,602	33,494	93,887
Australia	3,161	10,888	30,520
Total	7,763	44,382	124,407
Whale Oil:			
Australia	39,345	11,393	31,936
Italy	57,697	12,936	36,261
Netherlands	167,850	39,613	111,039
Total	264,892	63,942	179,236
Grand Total	272,655	108,324	303,643

1/In containers of 1 gallon or over.
Note: Values computed at rate of one New Zealand pound equals US$2.8031.

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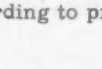
New Zealand (Contd.):

SWEDES ESTABLISH FACTORY FOR SPORT FISHING EQUIPMENT:

Negotiations between a Swedish manufacturer of sport-fishing equipment and a repsentative of a New Zealand firm for a jointly-owned factory in New Zealand have been completed, according to press reports from Sweden.

The Swedish company will establish a factory at Rotoura on the northern island of New Zealand for the manufacture of fishing rods, trolling spoons, and other sport fishing equipment. (U. S. Consul in Goteborg, Sweden, June 23, 1960.)



Peru

FISH-MEAL INDUSTRY SEEKS TO LIMIT PRODUCTION AND EXPORTS:

A deepening crisis in the Peruvian fish-meal industry, due to overproduction, declining world demand, and prices which have fallen to a point generally considered to be below the cost of production in most if not all instances, has caused Peruvian fish-meal producers to try to find a mutually acceptable course of unified action to meet the present critical situation. Some elements of the industry have expressed doubt that these efforts will be successful, and it has been suggested that the Peruvian Government may have to take action to curtail fish-meal production if the industry is unable to do so. Other elements believe that the industry will tend to be somewhat chaotic for the next year, during which a substantial percentage of existing plants will be forced to close or to change ownership, but that eventually, through the operation of economic factors, the situation will normalize and that, as a result, Peru will have a less spectacular but a sounder and stronger industry.

The Sociedad Nacional de Pesqueria (The National Fisheries Society), the trade association of the Peruvian fishery industry, has been endeavoring to help the fish-meal industry achieve stability through its sponsorship of efforts to counteract the present situation of overproduction and plummeting prices. Representatives of the Society have expressed the belief that the industry can achieve stability by fixing maximum production at 400,000 to 450,000 metric tons, a production quota which probably would give the Peruvian industry a fair and equitable share of the world market, and would permit prices to recover sufficiently to give producers a reasonable profit.

Under the auspices of the Society, meetings of representatives of the Peruvian fish-meal industry were held June 23 and June 30, 1960. The purpose of the meetings was twofold: To consider reports of committees which had been asked to recommend measures for limiting production and exports as a means of bringing stability to the Peruvian industry, and to consider a proposal that the Government of Peru be asked to suspend the issuance of licenses for new fish-meal plants while the problem of overproduction in Peru continues. (In that connection, it has been reported that the Ministry of Agriculture, Bureau of Fisheries and Hunting, has been withholding licenses for 12 new fish-meal plants.) The proposals were rejected by the large majority of those attending on the ground that they were contrary to Peru's traditional policy of freedom of commerce and industry.

The proposal advanced for consideration at the first meeting was that the 74 existing fish-meal plants should be assigned production quotas. That assigned to each plant appears to have been its fullest possible production capacity. The total of the fixed quotas for the 74 plants was 1,021,400 tons. Plants in a second group, consisting of new plants without production history for 1959 or the first 4 months of 1960, including those under construction, were to be limited to 40 percent of their authorized capacity, as specified in their licenses. The proposal did not come to a vote because of the strong opposition voiced at the meeting. The proposal offered at the second meeting is understood to have involved the establishment of four categories of plants according to size, with the objective that the production capacity of each group would be reduced by a specified percentage agreeable to the plants in each group. It also proved to be unacceptable.

A new committee, whose members consist of representatives of large producers, of small producers, and of new plants which have received licenses to operate but which have not yet entered into production, has been asked to seek new means of coordinated action acceptable to the several groups involved. Among suggestions for measures to be considered are the establishment of closed seasons for anchovy fishing, which would automatically reduce production, and a request to the Government for exemption of the fish-meal industry from duties and taxes in order to reduce costs below the world price.

Following the first meeting, data appeared in the press which pointed up the seriousness of the existing problem of overproduction in the Peruvian fish-meal industry. World consumption of fish-meal was estimated at 875,000 tons, whereas the export potential of world-producing countries (including Peru at 400,000 tons) was estimated at 1,070,000 tons, or nearly 200,000 more than world consumption. Moreover, Peru must not only compete on the bases of price and quality with other producing countries, including Chile, for the available markets, but it must meet European buyer resistance to offers of $60 per ton, increased freight rates from Peruvian ports to Europe, and the threat of restrictions in United States, British, and other markets whose domestic producers are seeking limitations on imports of fish-meal from Peru. An especially serious consequence of the present situation was stated to be the substantial reduction in revenues to the Government from taxes on fish-meal exports, an important source of income during recent years for the national budget.

The only official statistics for fish meal yet available for 1960 are those for exports during the first quarter of the year. They show a total of 148,091 tons for the first three months, or a monthly average of about 49,000 tons. Other data based upon shipping manifests show total shipments for January through May of approximately 250,000 tons, or a monthly average exceeding 51,000 tons. It is of interest to note that more than 72 percent of the shipments for the five-month period went to countries in Europe, principally the Netherlands and Germany; 10 percent went to the United States. Projecting exports for the full year at the same rate, the 1960 export total would be about 612,000 tons, compared with 277,600 tons exported in 1959 and 105,777 tons exported in 1958. Production in the latter year, the latest for which actual production data are available, amounted to 126,900 tons. Considering that between 80 and 85 percent of Peru's fish-meal production has been exported, total production in 1959 may be estimated at about 335,000 tons, and that for 1960 (at January-May level of production) at about 725,000 tons.

It has been suggested that Peru's fish-meal production in 1960 could exceed a million tons, because of the number of new plants coming into production and the expansion of existing plant and fishing facilities. However, some industry experts believe that a more realistic production figure for the current year would be about half that amount. They cite the

Peru (Contd.):

strike of anchovy fishermen in April and May, the seasonally lighter supply of anchovy for six months beginning in May, and above all the world price situation, as limiting factors for Peru's over-all fish-meal production in the current year. Since present world prices are below cost of production in Peru, it is considered likely that some plants may close for the time being. Those with sufficient financial backing can afford to wait out the crisis. Others may find themselves in stringent circumstances and be forced to remain closed permanently.

The consensus at present is that no solution of Peru's problem of overproduction through concerted action of Peruvian producers is in sight, due to the natural reluctance of producers or prospective producers to agree to curtail their output. The large established producers who understand the seriousness of the situation probably could find a mutually agreeable basis for limiting production in the circumstances. Newcomers to the industry, not appreciating the world situation and the menace to the entire Peruvian industry, including themselves, are concerned only with prompt returns on investments. In the end, some agreement on a production quota may be reached, but it probably would be a series of compromises without real value.

Some representatives of the industry have suggested that the world can use much more fish meal than it is willing to buy at present, and that the eventual solution of Peru's problem will come through wider use of the product. They believe such a trend could develop--possibly beginning in four months or so--when all fish meal sold under forward contracts at high prices has been absorbed, and all buyers have had the advantage of the moderate-priced product. They believe Peru can produce about half a million tons of fish meal a year and that the industry itself, emerging from the present crisis as a stronger and better developed segment of Peru's economy, will maintain that rate of production, according to the report dated July 7, 1960, from the United States Embassy in Lima.

Portugal

CANNED FISH INDUSTRY, 1959:

In 1959, Portugal exported 76,986 metric tons of canned fish, valued at 1,142 million escudos (US$39.7 million) as compared with 68,102 tons in 1958, valued at 1,035 million escudos (US$35.9 million). Exports in 1959 were at a record high and were substantially higher than in 1958, another record year. The United States, one of Portugal's leading customers, purchased some 7,340 tons, valued at nearly US$5 million, but not including a small amount shipped to United States Territories.

Considerable competition among Portuguese exporters resulted in lower export prices in 1959, despite higher production

Table 1 - Portugal's Exports of Canned Fish by Type, and Country of Destination, 1959[1/]

Country	Sardines		Tuna		Anchovies		Mackerel		Other Fish		Total Canned Fish	
	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000
United States	3,368	2,144	1,027	728	2,707	1,951	40	20	198	124	7,340	4,967
United States Territories	51	24	-	-	-	-	-	-	60	42	111	66
Africa, British East	354	159	4	3	19	13	4	3	-	-	381	178
Africa, British West	1,380	619	-	-	3	2	-	-	152	55	1,535	676
Africa, French Eq.	351	160	-	-	1	1	-	-	28	11	380	172
Algiers	156	71	-	-	50	35	-	-	44	17	250	123
Australia	264	121	6	4	170	48	-	-	18	6	358	179
Austria	2,269	1,069	-	-	117	82	37	18	85	32	2,508	1,201
Belgian Congo	798	363	21	16	10	7	51	25	406	150	1,286	561
Belgium-Luxembourg	3,905	1,843	103	73	90	63	913	464	15	6	5,026	2,449
Canada	295	165	6	4	183	127	32	17	5	1	521	314
Cyprus	130	60	-	-	18	12	2	1	161	41	311	114
Czechoslovakia	106	49	-	-	-	-	12	7	-	-	118	56
Denmark	338	153	-	-	2	2	-	-	2	1	342	156
France	3,167	1,446	18	13	1,040	702	213	106	135	55	4,573	2,322
Germany	16,601	8,314	15	11	208	145	72	36	3	1	16,899	8,507
Ghana	2,313	1,075	-	-	2	1	-	-	-	-	2,315	1,076
Greece	993	478	-	-	74	50	27	N.A.	1,168	232	2,262	760
Holland	1,113	529	-	-	7	5	4	2	16	4	1,140	540
Italy	4,443	2,386	2,241	1,572	995	887	1,562	783	958	377	10,199	6,005
Jordan	215	98	-	-	3	2	-	-	107	37	325	137
Kuwait	110	50	-	-	2	1	2	1	-	-	114	52
Lebanon	659	305	-	-	15	11	17	9	39	13	730	338
Liberia	69	32	-	-	-	-	-	-	70	25	139	57
Mexico	767	353	16	11	10	7	-	-	13	9	806	380
Overseas Portuguese Provinces	993	446	27	19	10	8	-	-	57	29	1,087	502
Philippines	2,049	894	-	-	2	1	-	-	360	312	2,411	1,207
Poland	517	239	-	-	23	17	-	-	-	-	540	256
Syria	388	180	-	-	3	2	-	-	158	58	549	240
Sweden	931	408	-	-	8	6	15	7	2	1	956	422
Switzerland	1,320	700	72	50	253	178	172	89	14	2	1,831	1,019
Togoland & Fr. Cameroons	353	157	-	-	-	-	-	-	-	-	353	157
Union of South Africa	114	53	10	7	54	37	2	1	-	-	180	98
United Kingdom	7,492	3,448	7	5	179	125	5	3	5	1	7,688	3,582
Venezuela	-	-	303	214	82	58	2	1	5	4	392	277
Others[1/]	764	359	60	42	119	82	52	26	35	12	1,030	521
Total	59,136	28,950	3,936	2,772	6,359	4,668	3,236	1,619	4,319	1,658	76,986	39,667

1/Includes nations with shipments of less than 100 tons or not individually identified.
Note: Values converted at the rate of one Portuguese escudo equals US$0.03472.

Portugal (Contd.):

costs, especially for fillets of anchovies which were sold at the prewar price. By the end of the season, however, the prices for stocks on hand increased--this in turn caused prices to rise to a level which resulted in buyer resistance.

Actually the canned fish pack in 1959 was below that for 1958, and the record high exports were achieved by using the 1958 carryover stocks.

Exports of canned tuna to Italy suffered due to competition from Japanese and Scandinavian tuna which entered Italy duty free.

The drop in the 1959 pack was due principally to sardines--the 1959 landings were 16,000 tons less than in 1958. But mackerel and tuna landings also dropped in 1959. It was reported that the decline in the landings of sardines was not due to a natural scarcity but rather to the canners not buying to meet their needs because ex-vessel prices were considered too high.

Table 2 - Portugal's Sardine Landings, 1958-59, and 1959 Utilization

Item	Quantity	Value	
	Metric Tons	1,000 Escudos	US$1,000
Landings:			
1959	123,314	341,628	11,820
1958	139,339	317,956	11,001
Utilization, 1959:			
Canning	62,204	180,369	6,240
Salting	1,053	1,923	67
Fresh fish	60,057	159,336	5,513
Total	123,314	341,628	11,820

In addition, the industry was plagued by a low selling price for its pack. At one point the price was so low that French packers attempted to keep the Portugese product out of France. On the other hand, in the latter part of the year an extremely high price prevailed. Although the ex-vessel price for sardines in 1959 was higher than in 1958, the export price for canned sardines was much lower in 1959.

In 1959, sardine landings declined to 123,314 metric tons from 139,339 tons in 1958 (table 2). Of the amount landed in 1959, 62,204 tons were canned. (Conservas de Peixe, April 1960.)

Notes: (1) Values converted at the rate of: 1958, 1 escudo equals US$0.0346; 1959, 1 escudo equals US$0.0347.
(2) Also see Commercial Fisheries Review, June 1960 p. 60.

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CANNED FISH EXPORTS, FIRST QUARTER 1960:

Portugal's exports of canned fish during the first quarter of 1960 amounted to 16,684 metric tons, or 924,000 cases. Sardines comprised the bulk of the exports with 85.6 percent of the total, followed by anchovy fillets (7.2 percent).

Portuguese Canned Fish Exports, January-March, 1959 and 1960

Product	January-March			
	1960		1959	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
Sardines	14,287	752	13,052	672
Chinchards	244	13	-	-
Tuna and tunalike fish	456	13	609	22
Anchovy fillets	1,203	120	1,593	159
Mackerel	58	3	1,361	55
Others	436	23	403	29
Total	16,684	924	17,018	937

During January-March 1960, Portugal's most important canned fish buyers were Germany with 3,732 tons, followed by the United States with 2,114 tons, the United Kingdom with 2,025 tons, and Italy with 1,509 tons. The principal canned fish products imported by the United States were sardines (957 tons) and anchovy fillets (633 tons). (Conservas de Peixe, May 1960.)

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CANNED FISH PACK, FIRST QUARTER 1960:

The total Portuguese pack of canned fish, in oil or sauce, for the first quarter of 1960 amounted to 4,392 metric tons, or 287,000 cases. Sardines accounted for 51.8 percent of the total pack. Anchovy fillets followed with 31.6 percent. (May 1960 Conservas de Peixe.)

Portuguese Canned Fish Pack, January-March 1959 and 1960

Product	January-March			
	1960		1959	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In oil or sauce:				
Tuna and tunalike fish	543	19	1,829	182
Mackerel	2	-	4	-
Chinchard	11	1	-	-
Sardines	2,277	120	1,907	100
Sardinelike fish	24	1	4	-
Anchovy fillets	1,387	138	203	7
Others	148	8	340	17
Total	4,392	287	4,287	306

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FISH CANNING INDUSTRY FAILS TO IMPROVE EXPORT PRACTICES:

The important Portuguese sardine canning industry in 1959 again failed to improve

Portugal (Contd.):

inefficient export practices. Industry leaders and government officials have continued to point out that with about 250 canneries (includes 75 canneries with less than 21 workers) and over 2,000 brands of sardines, Portuguese sardine exports cannot be effectively advertised or marketed. This has been a disappointment to many in the industry who believe Portugal could improve her exports substantially through an agreed reduction of the number of export brands, the adoption of more standard packaging and, especially, an advertising campaign abroad similar to that carried out by Norwegian sardine canners, the United States Embassy in Lisbon stated in a June 21, 1960, dispatch.

Singapore

FISHERIES TRENDS, 1959:

Estimated commercial landings of fishery products in Singapore during 1959 amounted to about 11,300 metric tons. Total consumption (landings plus imports) in 1959 was estimated at about 38,900 tons. The number of fishing vessels licensed in 1959 included 1,904 without power, 639 vessels with outboard motors, and 154 vessels with inboard motors--a total of 2,697 craft.

There is very little processing of fish in Singapore. During periods of good catches some anchovies are boiled in brine and sold as boiled fish. The boiled-in-brine anchovies may also be sun-dried and sold locally as dried "billis." In addition, some red snappers are salt-cured. (United States Consulate, Singapore, report of June 23, 1960.)

South-West Africa

NEW TYPE SPINY LOBSTER COLLAPSIBLE TRAP TESTED:

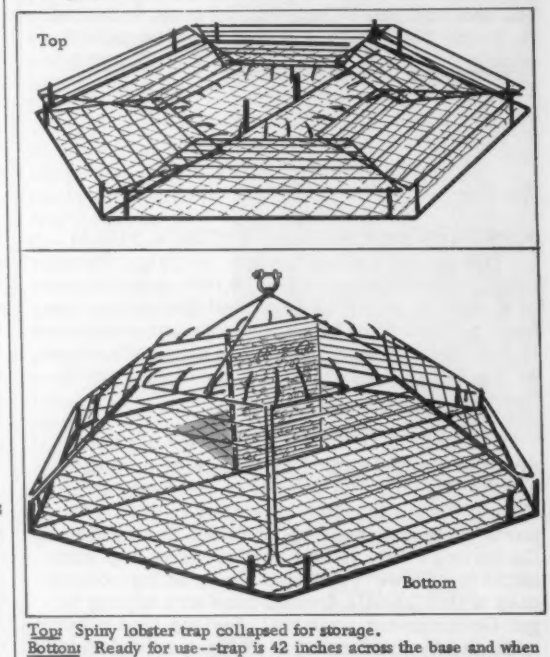
Research vessels of the South-West Africa Administration are conducting tests on a new type of spiny lobster trap which has been designed and developed in South-West Africa for use on the Union and South-West African coasts.

Although the final report on the traps is not yet available, the results of two tests already carried out were as follows:

(1) One trap was lowered to the bottom for 30 minutes in 25 fathoms of water and in a thinly populated area. Upon hauling, it was found to contain 15 fairly large spiny lobsters.

(2) Thirty spiny lobsters were caught and left submerged in the trap, for 15 hours. When the trap was hauled up the lobsters were still in the trap, although there was every indication that they were exhausted.

These results emphasize two of the claims made for the new traps, namely that they are successful in attracting spiny lobsters, and that once in the trap they have little chance of escape.



Top: Spiny lobster trap collapsed for storage.
Bottom: Ready for use--trap is 42 inches across the base and when opened is 9 inches high. Bait basket in center is rectangular, although later models have a triangular bait basket so that it can be collapsed to form an integral part of the trap.

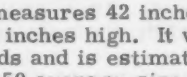
The trap is constructed in the form of a metal framework of truncated pyramid shape with a hexagonal base. The sides slope upwards and inwards to a long opening sufficiently large to allow the lobster to enter the trap. Inside the framework is a wire-mesh bait basket of triangular shape.

In use, the lobsters crawl up the side of the trap to reach the bait in the basket. They cannot take the bait without actually entering the trap, and, once they are inside, the possibility of escape is remote.

South-West Africa (Contd.):

The trap measures 42 inches across the base and is 9 inches high. It weighs less than ten pounds and is estimated to hold between 40 and 50 average-size spiny lobsters. For storage purposes, the traps collapse to a thickness of one inch; enabling boats to carry large numbers in a limited space. It is expected that dinghies will be able to carry more than eight traps.

As the spiny lobster cannot remove bait from the traps, bait expenditure is expected to be considerably reduced. The traps have also been constructed so as not to hook on the sea bottom. They will be manufactured in South-West Africa under a Union patent. (South African Shipping News and Fishing Industry Review, April 1960.)



Spain

LICENSES IMPORTS OF FROZEN TUNA:
The Spanish Government in July 1960 issued import licenses for 10,000 metric tons of frozen tuna. It is reported that there has been a flood of offers from various countries to sell frozen tuna, including some albacore at the low price of US$180 (delivered in Spain).

The Japanese Government, noting that Spanish canned tuna in brine is at present competing with the Japanese product in the United States market, does not regard exports of frozen tuna to Spain as desirable. Up through July it had not licensed any such exports. However, Japanese trading companies which handle frozen tuna are trying to get Government approval, feeling that otherwise the Spanish market will be completely taken over by other countries. (The Suisan Tsushin, July 21, 1960.)

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FISHERIES TRENDS, APRIL-JUNE 1960:
Fish Exchange: A total of 13,923 metric tons of fish were landed during the second quarter of 1960, as compared with 11,968 tons for the previous quarter and 15,165 tons for the second quarter of 1959.

Landings of the most important species during the second quarter of 1960 were: 754 metric tons of albacore (665 tons for the second quarter of 1959); 1,694 tons of small hake (2,498 tons for the first quarter and 2,571 tons for the second quarter of 1959); and 2,457 tons of horse mackerel (1,198 tons for the first quarter and 1,927 tons for the second quarter of 1959). Second quarter 1960 sardine landings amounted to 1,482 tons (1,083 tons for the first quarter and 962 tons for the second quarter of 1959). Ex-vessel prices for sardines averaged 7.07 pesetas per kilo (5.3 U. S. cents a pound based on a rate of 60 pesetas to US$1 in effect since July 18, 1959) as compared with 6.52 pesetas per kilo (7.0 U. S. cents a pound based on a rate of 42 pesetas to US$1) in the same period of 1959.

The average price per kilo for all fish at the Exchange for the total catch during the second quarter of 1960 was 9.41 pesetas (7.1 U. S. cents a pound) as compared with 11.63 pesetas (8.8 U. S. cents a pound) in the first quarter of 1960 and 11.32 pesetas (12.2 U. S. cents a pound) in the second quarter of 1959.

Landings of large hake, which have a high ex-vessel value, increased in the second quarter of 1960 to 234 tons from 85 tons during the previous quarter, but were down sharply from the 538 tons landed in the first quarter of 1959. The average price per kilo for large hake during the quarter was 42.65 pesetas (32.2 U. S. cents a pound) as compared with 56.11 pesetas (42.4 U. S. cents a pound) for the previous quarter and 39.7 pesetas (42.9 U. S. cents a pound) for the first quarter of 1959.

Canning: With the lifting of the ban on sardine fishing in April 1960, and the initiation of the albacore season, canning activity in the Vigo area moved into full gear. Anticipation of another favorable export year has increased demand for both albacore and sardines both of which were in better supply than in the second quarter of 1959. Canners paid (based on peseta valuation) on the average about 44 percent more for albacore and about 7 percent more for sardines than in the second quarter of 1959.

The amount of fish purchased (2,469 tons) by the canners during the second quarter of 1960 exceeded that of the same period in 1959 by 812 tons, another indication of the industry's optimism as the new canning season got under way.

In addition to the higher costs paid for albacore and sardines, the canning industry is currently paying more for olive oil.

Spain (Contd.):

While the problem of tinplate supplies, a perennial plague to the canning industry, was resolved by the liberalization of imports of this product, the new customs duties promulgated in June 1960 have raised the price of imports and threaten to raise the cost of nationally-manufactered tinplate. The new duty, which is 30 percent ad valorem plus an additional charge of 12 percent ad valorem, has raised the price of imports approximately 11 percent. A 195-pound box of imported tinplate (from Western Europe) which was previously 1,677.21 pesetas ($27.95), now costs 1,856.70 pesetas ($30.95). At the present time, because of the unavailability of machinery necessary for the initial lamination process, the national tinplate industry has not been able to supply the national market, and it is doubted that the higher duties on imported tinplate will in any way contribute to the solution of the national producers' problems. Canners are particularly resentful of the new duties because in their view they are pointless, and only serve to raise their production costs and offer protection to an industry which is not in a position to make use of it.

Exports: In spite of increased costs for olive oil and tinplate, Vigo fish canners anticipate another exceptional year, particularly in exports of canned albacore to the United States. Forecasts run as high as double 1959 export levels, which in turn were well above

Authorized[1] Exports of Canned Fish from Vigo Area

Product	1959		1958	
	Metric Tons	US$	Metric Tons	US$
Albacore in brine	1,335	1,050,407	203	168,469
Albacore in oil	15	13,140	10	9,317
Anchovies in oil	193	158,276	154	138,648
Sardines	19	13,475	6	4,056
Other	18	16,086	9	9,357
Total	1,580	1,251,384	382	329,847

1/Normally actual exports are 6 percent below authorizations.

1958 exports. The actual level of exports will probably depend in large measure on the supply of fresh albacore available for canning. At the moment, the outlook is favorable. One factor, however, which helped boost 1959 exports, which is not present this year, was the surplus stocks unsold from the 1958 canning year, and which were exported in the summer of 1959 when the devaluation of the peseta stimulated the canned fish export boom. (United States Consulate report from Vigo, July 15, 1960.)

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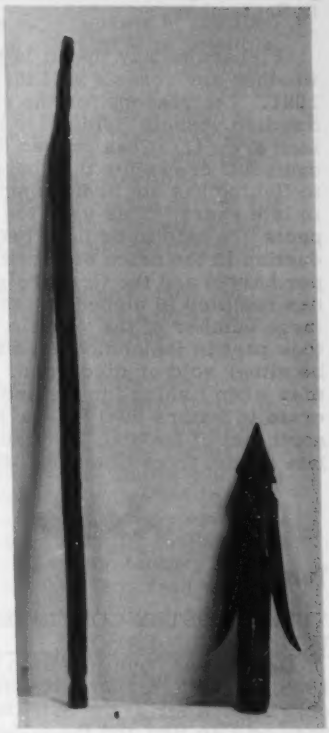
NORWEGIAN-TAGGED TUNA CAUGHT OFF SPANISH MOROCCO:

In June of 1960, a Spanish fishing boat caught a large tuna in the Atlantic off the coast of what was formerly Spanish Morocco, near Larache. When caught the tuna had a harpoon protruding from the dorsal fin area. A reference in Johannes Hamre's book "Annales Biologiques" indicates that the harpoon is of the type used by Norwegians in the summer of 1958 to tag 18 tuna in Norwegian waters. At the time of tagging the largest tuna weighed roughly 263 pounds. The tuna caught off Morocco weighed 397 pounds when landed. So over a two-year period a probable growth of at least 134 pounds took place.



Norwegian tagging harpoon removed from tuna caught off Spanish Morocco.

--Francisco Vallecillo Pecino
Ramon de Carranza
Ceuta, Spain

Sweden

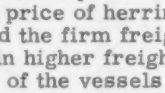
FEW VESSELS TO FISH HERRING OFF ICELAND IN 1960:

Only 11 Swedish fishing vessels from the Bohus area will take part this year in herring fishing off Iceland. This is a reduction by almost one-half of the number fishing that area in 1959. In 1948, about 80 Swedish fishing vessels (a record number) participated. Since then and up to several years ago the normal number was some 30 vessels. Most of the boats making the journey this year left

Sweden (Contd.):

port on July 18, and were expected back late in September.

Fishermen say that it is most uncertain whether any vessels will make the journey in 1961. The reasons for the sharp drop in Swedish vessels fishing for herring off Iceland are: (1) it has proved difficult to recruit full crews for the boats; and (2) Icelandic fishing has not been especially profitable in late years. This year the financial prospects are said to be poor because of the reduction in the price of herring by one crown per barrel and the firm freight market which has resulted in higher freight costs. Also, a large number of the vessels which formerly took part in Icelandic expeditions are said to be either sold or discarded. Swedish fishermen when fishing for Icelandic herring operate in waters 50-150 sea miles east or northeast of Iceland. (United States Consulate report from Goteborg, July 11, 1960.)



Tunisia

TUNA INDUSTRY CONTINUES TO USE FOREIGN LABOR:

Despite the firm intention announced in 1959, by the Tunisian Government to use only local labor at the Sidi Daoud tuna cannery on Cap Bon and the takeover of the cannery by the Tunisian National Fisheries Office, certain skilled jobs traditionally performed by Portuguese women and Spanish seamen are still held by nationals of those countries.

The tuna fishing season in Tunisia runs from early May to early July. This season 19 Portuguese women were employed to pack tuna meat in cans, while 30 Tunisian women were being trained. The Portuguese labor will be eliminated as soon as possible, according to Tunisian officials.

Captains of fishing boats traditionally have been Spaniards who follow the tuna across North Africa, working for a series of canneries. This season, 1 Spanish captain and 7 other Spaniards were employed at Sidi Daoud. The Director of the National Fisheries Office said skills required by the tasks and the seasonal nature of the employment make it unlikely they will be replaced by Tunisians in the near future, the United States Embassy in Tunis reported on July 7, 1960.

Turkey

IKENDERUN FISHERY TRENDS, JUNE 1960:

An Austrian citizen who resides in the United States and who has been the leading figure in the Iskenderun (on eastern edge of Mediterranean) fishing industry for the past 6 or 7 years reports that the shrimp catch (September 1959-May 1960) was below normal, amounting to about 50 tons. Approximately 28 tons were exported to Syria and Lebanon and the remainder consumed in Turkey. There were no exports during the 1959/60 season to the United States due to price factors. The Austrian citizen explained that shrimp has been abundant in the United States, and the prices in New York have been too low. Turkish shrimp, although of excellent size and quality, cannot be sold profitably in the United States at less than 75 cents a pound. On the other hand, the demand in Syria and Lebanon has been strong and prices correspondingly high. As to the future, the Austrian citizen believes the prospects for shrimp exports to the United States may improve due to higher prices at New York. Egypt and Lebanon have recently signed a commercial agreement which grants Egyptian shrimp duty-free entry into Lebanon. The result has already been noted in reduced exports of Iskenderun shrimp to Beirut, Lebanon. Syria, particularly Aleppo, is now the main market for Iskenderun's fish products. This and other factors may favor the export of Iskenderun shrimp to the United States, but the volume will not exceed 5-10 tons and will in all probability be less, according to the Austrian citizen.

In June this year the Austrian was in Iskenderun awaiting the turtle season which this year has failed to materialize. Last year he slaughtered over 2,000 turtles and shipped the frozen meat to West Germany. This year, for reasons no one understands, there have been none. The eel catch from Amik Lake near Ankara has also been far below normal this year for equally mysterious reasons. The Austrian citizen is turning his attention to the development of yellow pike in Turkey. Last year he shipped a few sample packages of yellow pike fillets, caught in the lakes near Samsun and Izmir, to a number of places including Philadelphia and Buffalo. The results were excellent, and he believes the possibilities abound to develop this fish in many areas of Turkey. He cites the lakes that have been created behind dams such as the Seyhan in Adana as excellent breeding grounds for yellow pike or carp. He says the program to develop fresh-water fish in Turkey would only require a little know-how and initiative and very little capital and cites his experience in developing the fish industry in Israel as supporting evidence. He is not optimistic that the Turks can or will supply any of these necessary ingredients.

The manager of the Iskenderun Meat and Fish Office confirms that there have been no recent shrimp exports to the United States and that the past season has been a poor one for the local fishing industry. He attributes this in part to the primitive methods and equipment used and the lack of any organized development program. The variation in the quantity of shrimp from year to year cannot be explained. The manager also mentioned a project to establish a canning plant for eels and turtle meat in Iskenderun, which he believes an American firm in conjunction with local fishing firms is considering. He thinks such a venture would be successful and would promote the local production of these items and possibly others. It could also be an important foreign-exchange earner. (United States Consulate in Iskenderun, Turkey, reported on June 24, 1960.)

U. S. S. R.

POLAND AND EAST GERMANY EXPORT FISHING VESSELS TO SOVIET UNION:

Poland and East Germany have become important exporters of fishing craft to the Soviet Union. By the end of 1965 Poland is scheduled to deliver 19 vessels of the "Leskow" type, combination trawlers and factoryships of 1,250 tons, according to the June 7 issue of Vodnyj Transport.

During the last two years Poland has delivered 4 motherships and in 1960 will deliver 3 more of the same type. Each of these has the capacity to receive and process the catch of 4 trawlers.

East Germany delivers to the Soviet Union annually up to 75 medium trawlers with cold-storage facilities. At present East German shipyards are building vessels of the "Tropik" type which are designed to fish for sardines and tuna. A number of these vessels will be delivered next year. (Fiskets Gang, July 7, 1960.)

United Kingdom

DIELECTRIC METHOD FOR THAWING FISH DEVELOPED:

The industrial thawing of frozen fish which normally takes up to 24 hours in air, can now be done in about 15 minutes by dielectric heating. This new development is the result of work at the Torry Research Station in Aberdeen, Scotland.

It is of economic importance, especially in view of the steadily increasing large-scale utilization of frozen fish.

The method, known as dielectric thawing, depends on the fact that if any material is placed between, but without touching, two metal plates which are charged with an alternating voltage of many thousands of volts at a frequency of about 40 million cycles per second, energy is produced in the material in the form of heat.

Under well defined conditions, fish may be uniformly thawed throughout a block of the frozen material--either as whole fish as in the case of herrings, or as fillets. It is possible to control conditions far more accurately than in existing methods, for example, so that individual fish in a block may be separated while remaining partially frozen.

Laboratory-scale experiments at the Research Station have shown that it is possible to use dielectric heating successfully on tiny pieces of frozen fish. Pilot-scale apparatus, using slightly modified equipment which is commercially available, was therefore set up. Initially, the problem of "runaway heating" was encountered; small portions of blocks of fish absorbed the major part of the available energy and became cooked, while the rest of the block remained hard-frozen.

This problem has now been solved, and fish may be fed into the machine on an endless belt and thawed in 15 minutes.

The implications of this work are very wide. At present fish is thawed by laying it out in the air; it is sometimes, in addition, sprayed with water. Under these conditions, fish on the outside of a block thaws quickly and begins to deteriorate, while that in the middle remains frozen. Apart from possible deterioration, however, existing methods are slow, require much labor and factory space, and are unsuitable for fish factories with production lines.

The new method requires no handling during thawing, is quick, and therefore keeps deterioration to a minimum, and the equipment occupies only a few square yards of floor space.

The capital cost--about £10,000 (US$28,000) for equipment to thaw one ton of fish per hour--is comparable to that for freezing equipment of similar capacity.

Running and depreciation costs appear to compare favorably with the costs of existing methods of thawing.

The potential results of this development, which is the subject of a patent application, are such that they could revolutionize certain sections of the fish handling and processing industry in a relatively short space of time. (Fishing News, July 8, 1960.)

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JAPANESE NEGOTIATE FOR PURCHASE OF WHALING FLEET:

A British whaling company announced on July 12, 1960, that conditional agreement

United Kingdom (Contd.):

(subject to approval by the Japanese Government) had been reached with a Japanese whaling company for the sale of the British fleet consisting of the factoryship Balaena, the refrigerated vessel Enderby, and 7 whale catchers. The total book value of the British fleet as of July 31, 1959, was £1,711,858 (US$4,793,000). Net proceeds from the sale are estimated to be about £2.5 million (US$7 million).

Although the British firm gave no reason for disposing of their whaling fleet, it is believed to be due to dwindling profits from Antarctic whaling. The British firm had a net profit of £71,333 ($200,000) in 1958, but showed a net loss of £490,471 ($1,373,000) in 1959.

Additions to Japanese and Russian whaling fleets and a limited resource, plus declining world whale-oil prices may be contributing factors to the British firm's decision to dispose of its fleet. Whale oil that sold in London in 1950 for £127.10.0 ($357) a long ton had dropped to £77.10.0 ($217) in 1958 and sold for only £72.10.0 ($203) a long ton in 1959 and 1960. The Japanese, with a good market for whale meat, are not so dependent on the world price for whale oil in order to operate at a profit. (U. S. Embassy in London, July 14, 1960.)

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TRADERS DISTURBED THAT U. S. FISH MEAL DEMAND HAS DROPPED OFF:

United Kingdom traders in protein meals are disturbed by reports that the United States demand for fish meal this year would be less than a year ago. It is pointed out in Britain that fish meal prices have dropped some 40 percent since Christmas and that with Peru producing large quantities, only the United States can relieve the distressed market situation. Imports of fish meal have been increased by most European countries during the past six months, but demand is normally more unelastic in Europe than in the United States.

It is claimed that for the first time, animal protein meal is selling at less than vegetable meal. (United States Embassy, London, report of July 18.)

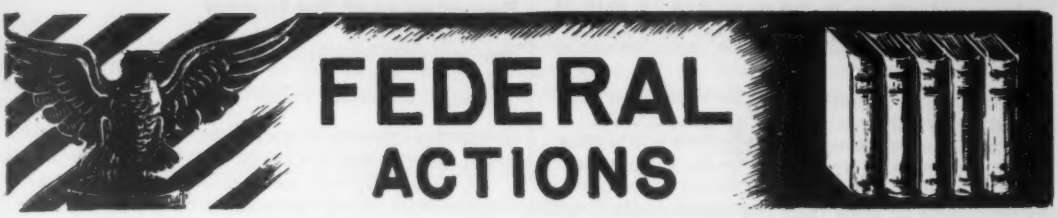
MANATEE FOR AQUATIC VEGETATION CONTROL?

The Review, vol. 22, no. 4 (April 1960), on page 5, reported that the Food and Agriculture Organization and the Indo-Pacific Fisheries Council are exploring the possibility of introducing manatees (sea cows) into Ceylon and Thailand to control aquatic vegetation.

The Director of the Fisheries Division, FAO, wrote on August 23, 1960, that the report is substantially incorrect and misleading since neither FAO nor the IPFC are studying the practicability of such an introduction nor are they backing such a project.

The Director in his letter points out that the genesis of the statement may lie in the fact that a project for water-weed clearance in navigable waterways, including a study of several methods, including the use of "herbivorous water animals," was listed in the Report of the Inland Transport Committee (7th Session) to the Economic Commission for Asia and the Far East 14th Session, Malaya, 1958. The cooperation of TAA and/or FAO was to be sought.

Some information on the control of aquatic weeds (especially with 2, 4-D) and including the available data on manatees and nutria was sent to the Transport Division of ECAFE at its request by FAO's Regional Fisheries Officer in Bangkok. However, this constituted FAO's only contribution to the study.



Federal Trade Commission

SHRIMP-PROCESSING MACHINERY FIRM DENIES CHARGES OF UNFAIR COMPETITION:

A New Orleans shrimp-processing machinery firm has denied Federal Trade Commission charges of using unfair methods of competition which have unlawfully hindered its competitors in the shrimp-processing machinery business (answer 7887, Shrimp). Joining in the firm's answer are the firm's 6 active partners, who were cited in the May 13, 1960, complaint of the Commission as the firm's active partners and as representative of approximately 26 limited partners.

A separate answer was filed by the Houma, La., packing company, which is a silent partner and also is owned and controlled by members of the family owning the New Orleans shrimp-processing machinery firm. The Houma company processes and cans raw shrimp which is taken primarily from the Gulf Coast fishing area; and the New Orleans firm leases, licenses, and sells shrimp-processing machinery, such as cleaners, graders, deveiners, and separators.

Both companies deny Commission allegations that they have combined in carrying out various unfair practices engaged in by the New Orleans firm, and that these practices have given the New Orleans firm a virtual monopoly in the domestic shrimp-processing machinery industry and otherwise lessened competition.

For example, the complaint alleged, the New Orleans firm has obtained exclusive rights to processing machinery through agreements with patentees and prospective patentees but in most instances never attempted to manufacture, develop, or commercially exploit the machinery; also, the firm has acquired from inventors rights to all their future inventions in this field.

To this, the company refers to the agreements "for a full and complete statement of the terms thereof."

The complaint also charged that the New Orleans firm unfairly filed patent infringement suits against manufactures and users of a competitive peeler developed by a New Orleans inventor and patented by him in 1957.

Defending its actions, the New Orleans company declared that this peeling machine was a full infringement of, and has been judicially held to be a full infringement of its valid and existing patent rights. The answer adds that the company "intends to assert and will assert its patent rights against any other purchaser or user or manufacturer" of such machines.

The respondents ask dismissal of the complaint. The New Orleans firm's answer to Commission charges was released by the Commission on July 26, 1960.

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TWO MARYLAND CLAM-DIGGER ASSOCIATIONS CONSENT TO ORDER FORBIDDING PRICE-FIXING:

Two Maryland clam-digger associations have consented to a Federal Trade Commission order (Consent Order 7578, Seafood) forbidding them to fix and enforce prices and selling conditions for seafood and to boycott dealers seeking better prices.

The Commission affirmed Hearing Examiner Edward Creel's order filed May 23, 1960, which had been agreed to both by the respondents and the Commission's Bureau of Litigation.

In its complaint of September 2, 1959, the Commission charged that since 1958 the respondents had conspired to suppress competition among themselves and between them-

selves and others in the purchase or sale of soft-shell clams harvested in the Chesapeake Bay region.

Under this conspiracy, the complaint alleged, they (1) established and maintained uniform and noncompetitive prices and terms for the purchase or sale of their clams; (2) boycotted dealers who purchased or sought to purchase at less than the fixed prices; and (3) used threats of reprisals, intimidation, and physical violence and other means to enforce adherence to their prices and terms.

The Commission's order halting these practices provides, however, that any association of bona fide clam fishermen acting pursuant to the Fisherman's Cooperative Marketing Act is not prevented from performing any acts permitted by that statute.

The agreement is for settlement purposes only and does not constitute an admission by the respondents that they have violated the law.

* * * * *

TWO FISHERIES FIRMS FORBIDDEN TO PAY ILLEGAL BROKERAGE:

Two Seattle, Wash., fishery firms are forbidden to pay illegal brokerage to their customers under the terms of a consent order announced July 18, 1960, by the Federal Trade Commission (Consent Order 7652, Seafood).

The Commission affirmed its hearing Examiner's initial decision based on an order agreed to by the Commission's Bureau of Litigation, the two companies, and their president and sales manager.

The concerns were charged in the complaint of August 6, 1959, with giving certain purchasers of their seafood pack allowances in lieu of brokerage or price concessions reflecting brokerage, in violation of Sec. 2 (c) of the amended Clayton Act. According to the complaint, a typical method used was to give these customers or their agents price reductions which were coupled with or offset wholly or partly by reducing the broker's fee earned on the sales.

The respondent's agreement to discontinue the challenged practices is for settlement purposes only and does not constitute an admission that they have violated the law.

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Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

NEW TRAINING PROGRAM FOR KEY EXECUTIVES INITIATED:

A new program designed to broaden the experience of key executives both in the Washington and field offices of the Bureau of Commercial Fisheries will be initiated this month, Commissioner of U. S. Fish and Wildlife Arnie J. Suomela announced on August 10.

The first step in the program involves the exchange of headquarters--and homes--for most of next year by a Division Chief in the Washington, D. C., office and the Area Director of California.

H. E. Crowther, Chief of the Division of Industrial Research in Washington, D. C., went to California in mid-August to take over the duties of Area Director in charge of the Bureau's Area Office at Terminal Island, Calif.

Donald R. Johnson, now Area Director for California, reported to Washington late in August for approximately a year.

In his new capacity, Crowther is responsible for line supervision of all phases of the Bureau's activities in California where the tuna, sardine, and oceanographic research programs are of major importance. In his Washington office position, Crowther has had staff supervision of industrial research programs for the country as a whole.

Crowther's duties in Washington are being handled by Charles Butler, Saltonstall-Kennedy Program Coordinator. This gives Johnson the opportunity to gain experience in all the fields in which the Bureau functions since he will serve several months in a staff capacity in the four Divisions--Administration, Biological Research, Industrial Research, and Resource Development--and in the Office of the Director of the Bureau.

Other similiar exchanges of personnel are planned for the future.

* * * * *

PROPOSED REGULATIONS FOR FISHING VESSEL CONSTRUCTION SUBSIDY:

A notice of Proposed Rule Making covering procedures for the Fishing Vessel Construct-

tion Differential Subsidy Program was published in the Federal Register of August 10, 1960. Interested parties had until September 9, 1960, to present suggestions or comments.

This program cannot take effect until the final regulations are promulgated and funds are appropriated. There is a possibility that funds will be appropriated during the present session of Congress.

The proposed regulations as published cover the basis and purpose of the program, difinitions, eligibility requirements, applicants, subsidy, contract, inspection of vessels, and payment of subsidy.

The Act of June 12, 1960 (Public Law 86-516) authorizes the Secretary of the Interior to pay a subsidy for the construction of fishing vessels in shipyards of the United States.

Department of Labor

WAGE AND HOUR DIVISION

COMMITTEE APPOINTED TO INVESTIGATE AND RECOMMEND MINIMUM WAGES IN PUERTO RICO FOR FOOD AND FISHERY INDUSTRY:

The appointments to, convening, and notice of hearings of committees to investigate and recommend minimum wages in various industries in Puerto Rico were announced in the Federal Register of July 29, 1960. Among the committees appointed was one for the food and related products industry (Industry Committee No. 49-A), which was to concern itself with the phases of the food industry which had to do with canning, preserving (including freezing, drying, dehydrating, curing, pickling, and similar processes), and packaging of foods, including meat animals, poultry, milk, and fish and seafood products, etc.

To the committee was referred the question of the minimum wage rates to be fixed under the provisions of section 6(c) of Fair Labor Standards Act of 1938, as amended. The committee was asked to investigate conditions in its industry, hear witnesses, and receive evidence. The committee convened on August 15, 1960, in San Juan, Puerto Rico. After the public hearings, the committee was instructed to recommend to the Wage and Hour Administrator the highest minimum wage rates for the industry covered by the committee. Therefore, the committee, among its recommendations, will include recommended wage rates for the canning and processing of fishery products in Puerto Rico.

Eighty-Sixth Congress

(Second Session)

Public bills and resolutions which may directly or indirectly affect fisheries and allied industries are reported. Introduction, referral to Committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as Signature into law or other final disposition are covered.

BUY AMERICAN ACT: H. R. 13025 (Van Pelt) on August 17, 1960, introduced a bill to amend title III of the Act of March 3, 1933, commonly referred to as the Buy American Act, so as to provide that, to the maximum extent practicable, the procurement of articles, materials, and supplies by the Federal Government shall be limited to articles, materials, and supplies domestically produced or manufactured; referred to the Committee on Public Works. Provides for purchase of other than United States-produced goods by Federal Government if quantity produced in United States is not sufficient or available in reasonable commercial quantities.

CHEMICAL PESTICIDES COORDINATION ACT: Regarding a request in the House to consider H. R. 12419, a bill to provide for advance consultation with the Fish and Wildlife Service and with State wildlife agencies before the beginning of any Federal program involving the use of pesticides or other chemicals designed for mass biological controls, one objection was voiced on August 23 and the bill was passed over.

COLD SPRING HARBOR MARINE BIOLOGICAL RESERVE: S. J. Res. 218 (Murray), on August 15, 1960, introduced a joint resolution to authorize the Secretary of the Interior to establish the Cold Spring Harbor Marine Biological Reserve; referred to the Committee on Interior and Insular Affairs. Would preserve in perpetuity the inner harbor of Cold Spring Harbor, Long Island, N. Y., because it is an unusual confluence of fresh and salt water in a protected area containing particularly rich marine flora and fauna. Since it has been the subject of marine research for 70 years and since the town of Oyster Bay plans to dredge the inner harbor, this bill was introduced to preserve the area's unique features.

COLUMBIA RIVER BASIN FISHERY RESOURCES (Hearings before the Committee on Interstate and

Foreign Commerce, United States Senate, 86th Congress, 1st Session, on S. Con. Res. 35, a concurrent resolution to make an investigation concerning anadromous fish and S. 2586, a bill to provide for the conservation of anadromous fish spawning areas in the Salmon River, Idaho, and S. 1420, a bill to promote the conservation of migratory fish and game by requiring certain approval by the Secretary of the Interior of licenses issued under the Federal Power Act, November 10 and 12, 1959), Part 2, Astoria, Oreg., and Lewiston, Idaho; 430 pp., printed. Contains letters, statements, and resolutions from the public and local government agencies.

FEDERAL FISHING STAMP (Hearings before the Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, House of Representatives, 86th Congress, 2nd Session, on H. R. 11410, May 31 and June 1, 1960), 58 pp., printed. Contains testimony presented by Government representatives; certain Departmental and Commission reports; and information, letters, and statements on the use of a Federal-State fishing stamp in connection with noncommercial fishing licenses for nonresidents of states.

FISH & WILDLIFE COOPERATIVE RESEARCH TRAINING UNITS: On August 23, 1960, the House passed S. 1781, a bill to establish cooperative unit programs of research, education, and demonstration between the Federal Government, colleges, and universities, the states and territories, and private organizations in the field of fish and wildlife resources. The Senate passed this bill May 4, 1960. The bill would continue a program which is already in progress. Senate on August 27 presented the bill to the President for signature.

FISHING VESSELS AND FREIGHTING OF FISH: H. R. 13052 (Kilgore) introduced in the House on August 19, 1960, a bill relating to documentation and inspection of vessels of the United States; referred to the Committee on Merchant Marine and Fisheries. Regarding United States laws relating to documentation and inspection of vessels of the United States, the bill reads as follows: "a vessel enrolled and licensed, or licensed, as a vessel of the United States to engage in the fishery, shall not be deemed to be used in employment for which not licensed, and shall not be subject to inspection, solely because such vessel takes on board on the high seas and transports without charge to a port of the United States the catch of another fishing vessel of the United States."

ICA GRANTS FOR FISHERIES: On August 24, 1960, Senator Gruening ordered to be printed in the Congressional Record, ICA grants to foreign countries for fishery projects for the past 5 fiscal years. Grants for 1955 totaled $1,431,561: 1956, $2,355,503; 1957, $3,415,000; 1958, $1,526,000; and 1959, $2,201,000.

IMPORTED COMMODITY LABELING: Presented to the President for signature August 26 by the House was H. R. 5054, an act to amend the Tariff Act of 1930 with respect to the marking of imported articles and containers. Provides that when articles, imported in containers required to be marked, are repackaged in the United States and offered for sale, the new package shall be marked with the name of the country of origin. Imported items which are processed in this country sufficiently to become an American manufacture are not included in the purview of the legislation and would not be affected. Passed House February 2; passed Senate July 2.

INSURANCE INDUSTRY: S. Rept. 1834, The Insurance Industry--Aviation, Ocean Marine, and State Regulation (August 10, 1960, 86th Congress, Second Session, Report of the Committee on the Judiciary Together with Individual Views made by its Subcommittee on Antitrust and Monopoly pursuant to S. Res. 238), 343 pp., printed. The March 9, 1945, McCarran-Ferguson Act of Public Law 15, established that the Federal antitrust laws "were applicable to the business of insurance to the extent that such business is not regulated by State law." This report is the first comprehensive effort by Congress to reexamine the insurance industry in the light of the McCarran-Ferguson Act and to measure the effectiveness of state regulation. This report deals essentially with the hearings relating to aviation insurance and ocean marine insurance, and the additional study by the subcommittee of the structure of state regulation. With regard to ocean marine insurance, the report deals with the industry structure, exemption from antitrust laws, the Federal Trade Commission investigation (discusses marine extension clause, agreements as to hull forms, protection and indemnity coverage, rating formula), and the nature and operation of American Hull Insurance Syndicate.

INTERNATIONAL FOOD AND RAW MATERIALS RESERVE: S. Res. 357 (Humphrey) introduced in the Senate August 9; referred to the Committee on Foreign Relations: Resolved, That it is the sense of the Senate that the President should explore with other nations the establishment of an International Food and Raw Materials Reserve under the auspices of the United Nations and related international organizations for the purpose of acquiring and storing in appropriate countries raw or processed farm products and other raw materials, exclusive of minerals, with a view to their use in (1) preventing extreme price fluctuations in the international market in these commodities; (2) preventing famine and starvation; (3) helping absorb temporary market surpluses of farm products and other raw materials (exclusive of minerals); (4) economic and social development programs formulated in cooperation with other appropriate international agencies. Participation by the United States in such an International Food

and Raw Materials Reserve shall be contingent upon statutory authorization or treaty approval, as may be appropriate.

Senate Committee on Foreign Relations on August 29 ordered favorably reported its original S. Con. Res. 116, expressing the sense of the Congress that the President should explore the creation of an International Food Program (S. Rept. 1922). Resolution provides for an international food program for furnishing food to less-favorably situated peoples with a view to its use in --(1) combating extreme price fluctuations in the international market; (2) alleviating famine; (3) helping absorb temporary market surpluses of farm products; (4) economic and social development programs.

H. Con.Res. 729 (Wolf), favoring further explanation for the establishment of an international food program for relief purposes, was introduced in the House August 29; referred to the Committee of Foreign Affairs.

S. Con. Res. 116 was recieved by the House and referred to the Committee on Foreign Affairs.

IRRADIATION OF FOOD: National Food Irradiation Research Program (Hearing before the Subcommittee on Research and Development of the Joint Committee on Atomic Energy, Congress of the United States, 86th Congress, second session, on national food irradiation research program, March 31, 1960), Part 2, 229 pp., printed. Contains statements from Atomic Energy Commission and Defense Department, and Department of Army witnesses; additional material submitted for the record by various Federal officials involved in the program. Appendixes include reports of various tests and studies made on acceptability of irradiated food products. Also included is a short bibliography on food preservation by irradiation.

OUTER CONTINENTAL SHELF AREA RESTRICTIONS IN GULF OF MEXICO: S. 3847 (Murray by request) introduced August 15, 1960, a bill to provide for the restriction of certain areas in the outer Continental Shelf for defense purposes, and for other purposes (Matagorda Water Range); referred to the Committee on Interior and Insular Affairs. Similar to S. 3866 (Murray) introduced in the Senate August 18, 1960.

PUBLIC WORKS APPROPRIATION BILL, 1961: By unanimous vote, the Senate on August 10, 1960, passed with amendments H. R. 12326, making appropriations for civil functions administered by the Department of the Army, certain agencies of the Department of the Interior, the Atomic Energy Commission, the Tennessee Vally Authority and certain study commissions, for the fiscal year ending June 30, 1961. The Senate insisted on its amendments and asked for a conference and appointed conferees. H. R. 12326 was passed by the House May 25, 1960.

On August 22, 1960, the House disagreed to Senate amendments to H. R. 12326, agreed to a conference, and appointed conferees.

Conference report was submitted to House August 26 on H. R. 12326 (H. Rept. 2181). Includes funds to permit detailed studies by the Fish and Wildlife Service of numerous Corps of Engineers and Bureau of Reclamation projects in the United States. These studies are provided for in the Fish and Wildlife Coordination Act which require that the Fish and Wildlife Service determine the probable affects on fish and wildlife resources of water control projects under the jurisdiction or control of the Federal Government and to insure that fish and wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs. Measures are recommended to protect and, where possible, to develop and improve fish and wildlife. Also includes funds for Lower Columbia River Fisheries Development, and Lower Columbia River fish sanctuary program for operation and maintenance by the U. S. Fish and Wildlife Service.

SCIENCE AND TECHNOLOGY COMMISSION: S. 1851, for the establishment of a commission on a Department of Science and Technology was passed over on August 19. Reported in Senate June 18, 1959, by the Committee on Government Operations (Senate Report No. 408). A similar bill, S. 3887 (Humphrey), was introduced in the Senate on August 25; referred to the Committee on Government Operations.

SHRIMP IMPORTS: On August 24, 1960, the Senate Committee on Finance adopted a committee resolution directing the Tariff Commission to make a thorough study of the shrimp industry and report to the Finance Committee early in the next session of Congress.

SMALL BUSINESS: Small Business Administration, 1960 (Annual Review of Programs and Activities of the Small Business Administration--Hearings before the Select Committee on Small Business, United States Senate, 86th Congress, Second Session, July 1, 1960. Part 2--Review of Lending Policies of the Small Business Administration), 59 pp., printed. Contains testimony, memorandums, tables, and charts concerned with a general review of the Small Business Administration's lending policies from July 1, 1958, to June 30, 1960.

SMALL BUSINESS ACT AMENDMENTS: On August 25, 1960, the Senate insisted on its amendments to H. R. 11207, to amend the Small Business Act so as to authorize an additional $150 million for loans to small business, agreed to conference requested by House, and appointed conferees. On the same day, the House disagreed to Senate amendments to H. R. 11207, requested a conference with the Senate, and appointed conferees.

SMALL BUSINESS ADVISORY SERVICES: H. R. 13039 (Schwengel) introduced in the House on August 18, 1960, a bill to amend the Small Business Act to improve and promote the development of a sound United States economy through the establishment of a program of advisory services to small business and other concerns, referred to the Committee on Banking and Currency. Provides for assistance to local communities by appointing advisory specialists to aid, advise, and inform small business concerns.

SMALL BUSINESS AND IMPORTS: The Select Committee on Small Business submitted on August 23, 1960, a report to the Senate entitled "Impact of Imports on Small Business" (S. Rept. 1908). The Small Business Committee's report briefly reviews existing and proposed legislation regarding tariffs and trade. "Our desire," said Senator Randolph on releasing the report, "was to provide for small businessmen an introduction to the aids that are now available to them, as well as to some of the ideas that have been advanced for improving the aids, when import competition becomes a serious problem." The Committee in its report makes six recommendations to ease the adverse effects of imports on small business.

Impact of Imports on American Small Business (Hearing before a Subcommittee of the Select Committee on Small Business, United States Senate, 86th Congress, 2nd session, on the impact of imports on American small business, June 16, 1960), 321 pp., printed. Contains statements from Congressmen, Federal officials, and the public.

Senate Report No. 1908, Impact of Imports on Small Business (August 23, 1960, 86th Congress, Second Session, Report of the Select Committee on Small Business), 21 pp., 1 graph, printed. Discusses the history of import controls, impact of imports on small business, Federal help available to small business, legislative proposals before Congress, and recommendations of the committee.

STATE DEPARTMENT APPROPRIATIONS: The House on August 22, 1960, disagreed to Senate amendments to H. R. 11666, the State, Justice, and Judiciary appropriation bill for 1961, agreed to a conference, and appointed conferees. The bill, which passed the House April 13, 1960, and the Senate June 30, 1960, provides funds for the United States to meet its obligations in connection with participation in nine international fisheries commissions.

On August 23, 1960, a conference report on H. R. 11666 was submitted to the House (H. Rept. 2136).

House Report No. 2136, Departments of State and Justice, the Judiciary, and Related Agencies Appropriation Bill, 1961 (August 23, 1960, 86th Congress, Second Session, Report from the Committee of Conference, to accompany H. R. 11666), 8 pp., printed. Contains the recommendations of the Conference Committee regarding this appropriation bill, which includes funds for nine international fisheries commissions. But none of the commisssions are mentioned in this report since there was no disagreement between the House and Senate on the amount of funds to be provided for the commissions.

On August 24, 1960, the House considered and adopted conference report on H. R. 11666. The Senate on the same date also considered and adopted the conference report and cleared the bill for the President. Conference action provided $1,875,000 for International Fisheries Commissions. This amount is the same as in the Senate and House bills. It is a little under the 1961 estimate of $1,925,000 and a little over the 1960 appropriation of $1,725,000. H. R. 11666 was passed by the House April 13, 1960, and by the Senate June 30, 1960. House presented bill on August 26 to the President for signature.

SUPPLEMENTAL APPROPRIATIONS FY 1961: The Senate Committee on Appropriations held hearings on August 14 on proposed supplemental items to be included in Second Supplemental Appropriations Bill for Fiscal Year 1961. Among the testimony presented was that by Andrew W. Anderson, Bureau of Commercial Fisheries, on funds for fishing vessel subsidies and Pacific Coast tuna research program.

H. R. 13161 (Thomas), a bill making supplemental appropriations for the fiscal year ending June 30, 1961, and for other purposes; introduced in the House August 26; House Committee on Appropriations on August 26 reported the bill to the House without amendment (H. Rept. No. 2166). Referred to the Committee of the Whole House on the State of the Union. Passed the House on August 26, 1960. This bill contains $100,000 for tuna research program and $500,000 to initiate the fishing vessel differential construction subsidy program. By a voice vote the House August 26 passed H. R. 13161. House-passed bill on August 27 was reported to the Senate (S. Rept. 1925).

House Report No. 2166, Second Supplemental Appropriation Bill, 1961 (August 26, 1960, 86th Congress, Second Session, Report from the Committee on Appropriations, to accompany H. R. 13161), 18 pp., printed. Contains summary of bill and Committee recommendations. Includes additional funds for a number of agencies and departments. For the Bureau of Commercial Fisheries the Committee allowed $100,000 (a reduction of $200,000 in the budget request) to expand tuna research in the Eastern Pacific. The Committee pointed out, "A total of $1,076,000 was recently made available for tuna research in the regular 1961 Appropriation Act, including $322,600 to continue special research on Eastern Pacific tunas which has been conducted over the past three years at a cost of $760,000. Effective use of the additional amount provided together with available funds should provide an adequate program during the remainder of the current fiscal year." The Committee also approved $500,000 of the $1,000,000 requested to initiate the program for payment of cost differential subsidies for construction of

fishing vessels in United States shipyards as authorized by Public Law 86-516, approved June 12, 1960. "The amount provided should be adequate for requirements during the remainder of the current fiscal year," states the Committee. Also provided $100,000 for the Bureau of Sport Fisheries and Wildlife for emergency repair of flood damage at three national wildlife refuges, and $150,000 for emergency dredging of the Oxbow Channel at the De Soto National Wildlife Refuge.

Senate on August 29 passed H. R. 13161, after adopting by voice vote most committee amendments.

TERRITORIAL WATERS EXTENSION FOR ALA., MISS., AND LA.: S. 3851 (Hill for himself and Sparkman), introduced in the Senate on August 15, 1960, a bill to amend the Submerged Lands Act to establish the seaward boundaries of the States of Alabama, Mississippi, and Louisiana as extending three marine leagues into the Gulf of Mexico and providing for the ownership and use of the submerged lands, improvements, minerals and natural resources within said boundaries; referred to the Committee on Interior and Insular Affairs. Gives the three states the same seaward boundaries (3 marine leagues, almost 10½ statute miles) as the Supreme Court awarded to Florida and Texas. Similar bills were introduced in the House on the same day: H. R. 12964 (Roberts); H. R. 12966 (Boykin); and H. R. 12972 (Huddleston). Also H. R. 12994 (Elliot), H R. 12996 (Mc Sween), and H. R. 12997 (Selden) were introduced August 16, 1960, in the House; and H. R. 13199 (Brooks of La.) introduced in House August 29, 1960.

WAGES--MINIMUM HOURLY RATE INCREASE: On August 10, 1960, the Senate debated S. 3758, proposing amendments to the Fair Labor Standards Act, and raising the minimum hourly wage to $1.15 effective January 1, 1961, to $1.20 in 1962, and to $1.25 in 1963. The present law provides a complete exemption from both the minimum wage and overtime requirements for fishing operations and for the processing of seafood. Seafood canning, however, is now covered by the minimum wage under the existing law and has an exemption only from the overtime requirements. The Senate bill changes the exemption with respect to the processing (freezing, preserving, packing) of seafood. Employees engaged in fish-processing activities are brought under the minimum wage provisions on the same scale as newly-covered employees in retail and service enterprises, but they will contunue to be exempt from the overtime requirements. However, fishing and activities at sea will continue to be exempt from minimum-wage coverage. The companion bill, H. R. 12677, passed the House June 30, 1960. The bill as passed by the House, would raise the $1-an-hour-minimum to $1.15 for workers now covered by the law effective January 1, 1961. It would also bring another 1.4 million retail workers under the law's protection but their minimum would be $1 an hour and they would not receive overtime payments. Section 13 of the Fair Labor Standards Act of 1938 is amended so that the exemption for the fishing industry in (a)(5) reads: "any employee employed in or necessary to the conduct of catching, taking, harvesting, cultivating, or farming of any kind of fish, shellfish, crustacea, sponges, seaweeds, or other aquatic forms of animal and vegetable life, including the going to and returning from work and including employment in or necessary to the conduct of the loading, unloading, or packing of such products for shipment or in propagating, processing (other than canning), marketing, freezing, curing, storing, or distributing the above products or byproducts thereof;" and the exemption for the fish canning industry in (b)(4) reads: "any employee employed in the canning of any kind of fish, shellfish, or other aquatic forms of animal or vegetable life, or any byproduct thereof." But the fish canning exemption is still limited to those employees "employed in the canning of any kind of fish." Present overtime exemption for fish canners and processors is not changed by the bill as passed by the House. While the Senate bill does not add to the fish-canning section the broader language added to the fish-processing part of the house bill, the Senate Committee on Labor and Public Welfare on June 27 stated: "The present exemptions in sections 13 (a) (5) and 13 (b)(4) have been judicially interpreted to apply to all employees employed in the seafood industry including any employee who participates in activities which are necessary to the conduct of the operations specifically described in the exemptions (McComb v. Consolidated Fisheries Company, 174 F. 2d 74, C. A. 3, 1949). These interpretations are consistent with the congressional purpose of treating all employees of one establishment in the same manner under the act and of avoiding segmentation as between different employees of the same employer engaged in the named operations."

Senator Stennis on August 12, 1960, submitted an amendment to be proposed by him to S. 3758, to retain the fisheries exemption and strengthen it by adding the words, "or necessary to the conduct of," both in the fresh and frozen fish and canned fish provision. The amendment submitted reads: On page 19, beginning with line 8, strike out through line 16, and insert the following: "(5) Any employee employed in or necessary to the conduct of the catching, taking, harvesting, cultivating, or farming of any kind of fish, shellfish, crustacea, sponges, seaweeds, or other aquatic forms of animal and vegetable life, including the going to and returning from work and including employment in or necessary to the conduct of the loading, unloading or packing of such products for shipment or in propagating, processing (other than canning), marketing, freezing, curing, storing, or distributing the above products or byproducts thereof; or . . ." On page 22, line 1, after the words "employed in" insert the words "or necessary to the conduct of . . ." The amendment was ordered to lie on the table and be printed.

On August 18, 1960, the Senate passed with amendment H. R. 12677, after substituting for its text the amended language of S. 3758, companion bill. Prior to this action, the Senate considered

several amendments to S. 3758, some of which were accepted. The Senate insisted on its amendments, asked for conference, and appointed conferees. S. 3758 was indefinitely postponed. The general fishery exemption for processing in the present law has not been retained in the Senate version of H. R. 12677. But the House version does retain the fishery exemption, for both fishing and processing activities. No action was taken on the Stennis amendment submitted on August 12, 1960.

Regarding a request in the House to send to conference H. R. 12677, one objection was voiced and the bill was passed over on August 23, 1960. On August 24 the House Committee on Rules deferred action on a rule to send the bill to conference.

On August 25, 1960, the House Committee on Rules granted a rule to take H. R. 12677 from the Speaker's table and send it to conference. The same day Smith from the Committee on Rules reported to the House H. Res. 624, providing for sending to conference H. R. 12677 (H. Rept. No. 2156). The resolution was adopted by the House by a voice vote, and the Speaker appointed conferees. The conferees then met in executive session to resolve the differences between the Senate- and House-passed versions of H. R. 12677, but did not reach agreement. H. R. 12677 passed the House June 30, 1960, and the Senate August 18, 1960.

WATER RESOURCES: The Senate Select Committee on National Resources met in executive session August 12, 1960, and approved an outline on the basis of which the staff will prepare a draft of the committee's report on problems of national water resources. This report will be acted on by a subcommittee after the sine die adjournment of Congress.

National Water Resources (Hearings before the Select Committee on National Water Resources, United States Senate, 86th Congress, Second Session, pursuant to S. Res. 48, May 24, 25, and 26, 1960. Part 22), 332 pp., 1 map, printed. Contains statements, resolutions, letters, and reports of various cooperators, organizations, and Federal Government and state officials in favor of a unified national water policy.

National Water Resources (Hearings before the Select Committee on National Water Resources, United States Senate, 86th Congress, Second Session, pursuant to S. Res. 48, May 26, 1960. Part 23), 240 pp., 1 map, printed. Contains statements and reprints of articles in favor of the Federal Government assisting in the development of our national water resources.

National Water Resources (Index to Hearings before the Select Committee on National Water Resources, United States Senate, 86th Congress, Second Session, pursuant to S. Res. 48. Index to Parts 1-23), 48 pp., printed. Contains an alphabetical list of people who appeared before the hearings, as well as lists of charts, graphs, maps, and tables that were presented.

FOOD ADDITIVES AMENDMENT DEALS WITH PROBLEM OF UNTESTED CHEMICALS IN FOODS

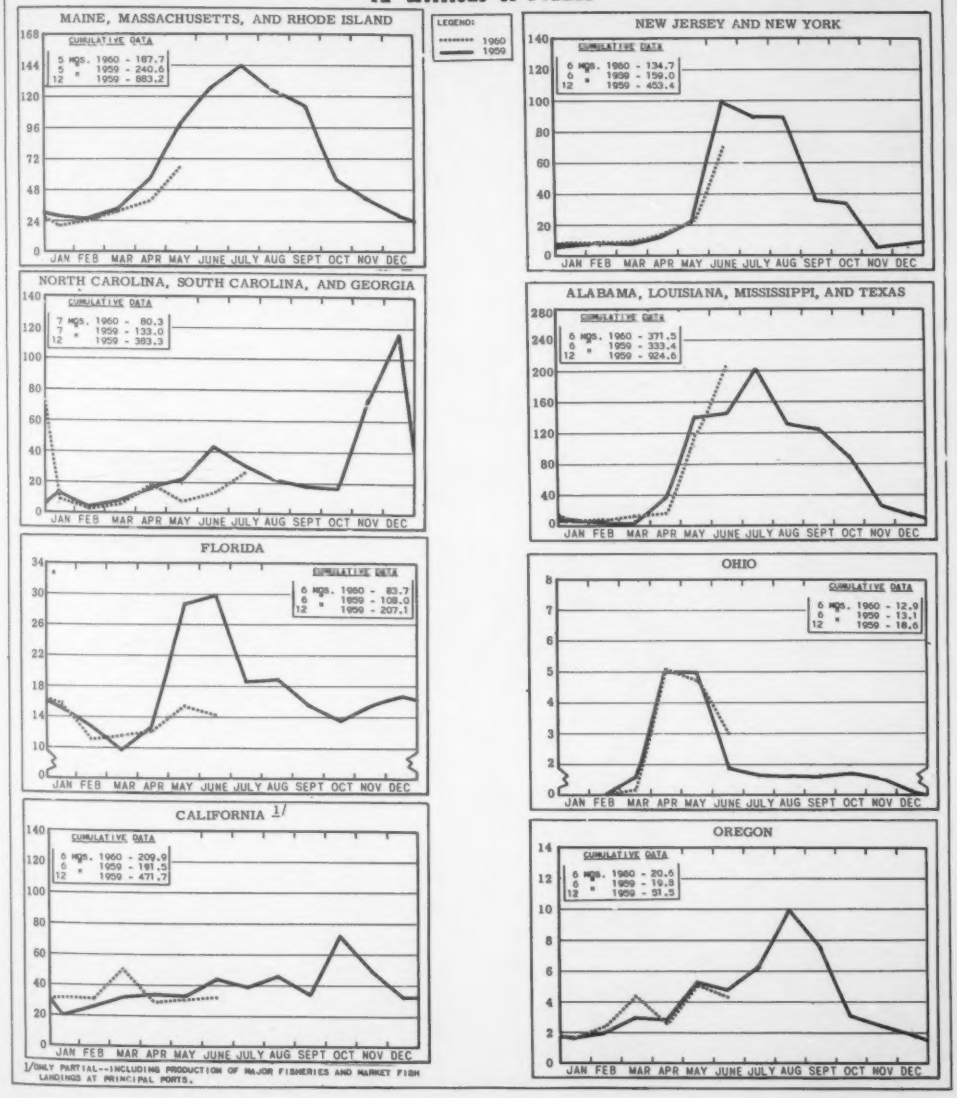
"The problem of untested or questionable chemicals in food is one of extreme importance, and the Food Additives Amendment is designed to deal squarely with this problem," said Dr. K. L. Milstead on May 3, 1960, in discussing the new amendment to the Federal Food, Drug and Cosmetic Act at the National Fisheries Institute convention at Miami Beach, Fla. Milstead is Director of the Division of Regulatory Management, Bureau of Enforcement, Food and Drug Administration, U. S. Department of Health, Education and Welfare.

Under the Food Additive Amendment, which became fully effective on March 6, 1960, only those substances "generally recognized to be safe" and appearing on the so-called "white lists" may be an acceptable ingredient, Milstead told over 800 fishery executives.

"We have refused all entries into this country of fish that contain nitrites and several seizures have been made of products that were originally exported from Canada or Nova Scotia," said Milstead, in citing an example of action taken under the amendment. "However, there apparently has been very little use of sodium nitrite in this country for preservation of fresh or frozen fish."

CHART 1 - FISHERY LANDINGS for SELECTED STATES

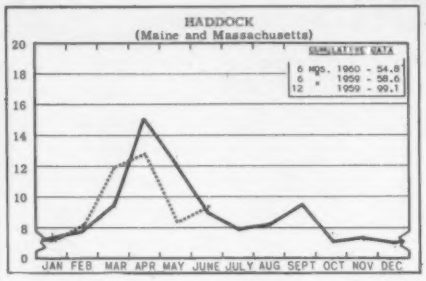
In Millions of Pounds

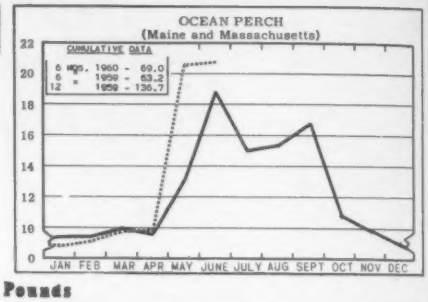


1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

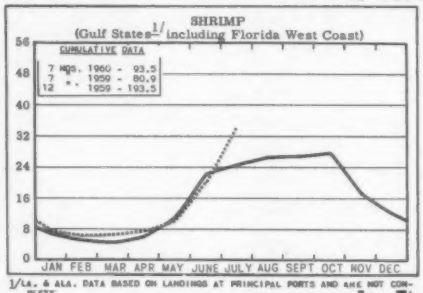
CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

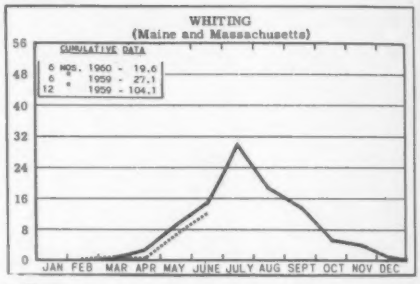




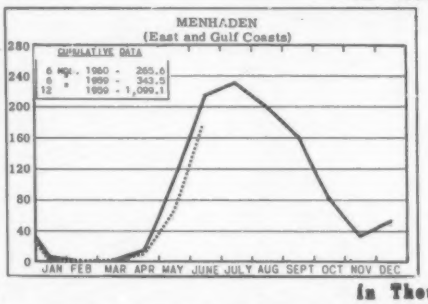
In Millions of Pounds

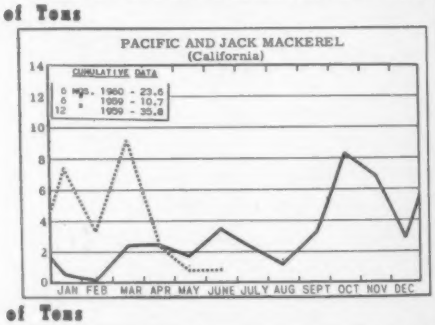


1/La. & Ala. data based on landings at principal ports and are not complete.

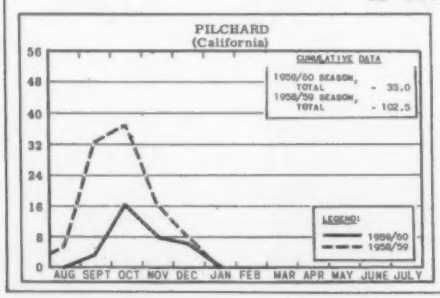


In Thousands of Tons





In Thousands of Tons



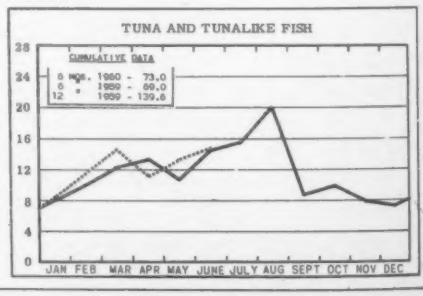
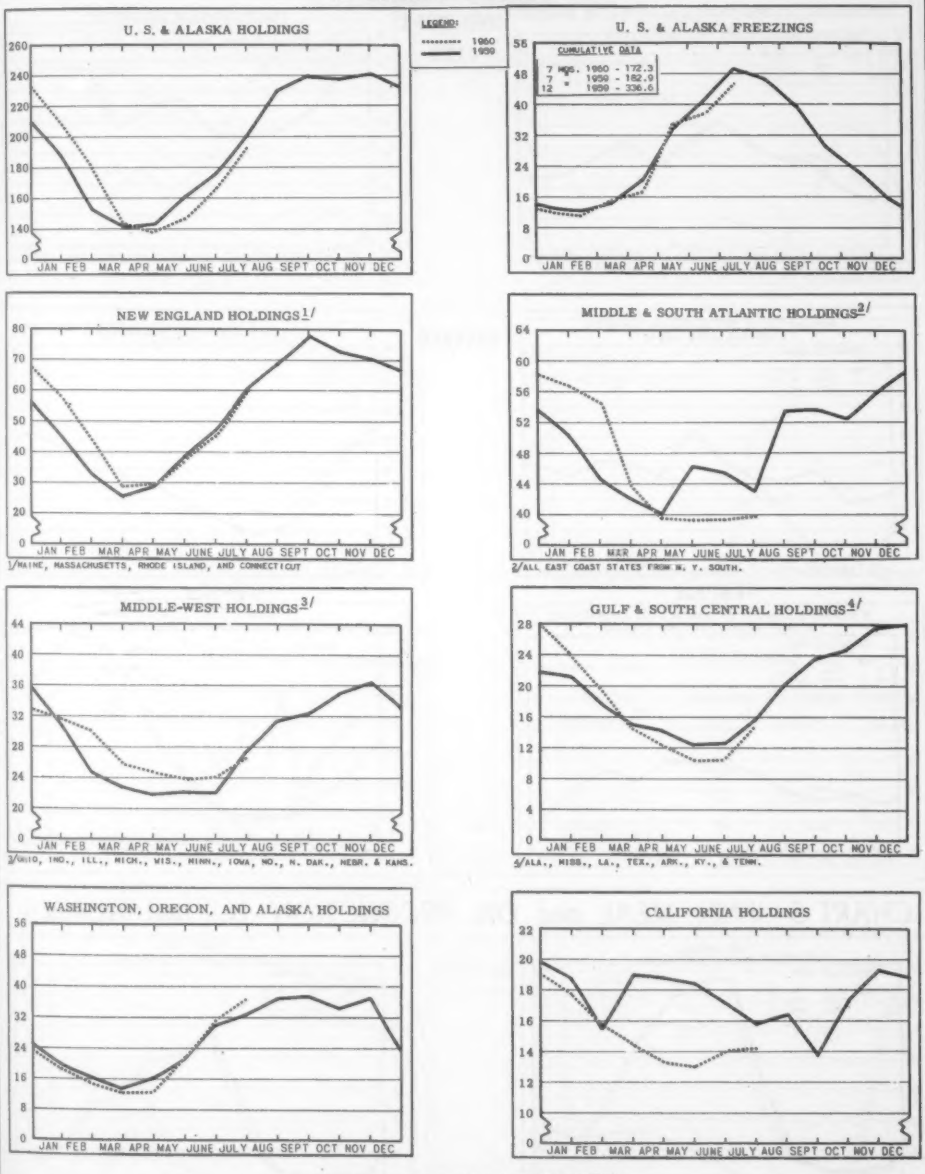


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds



* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

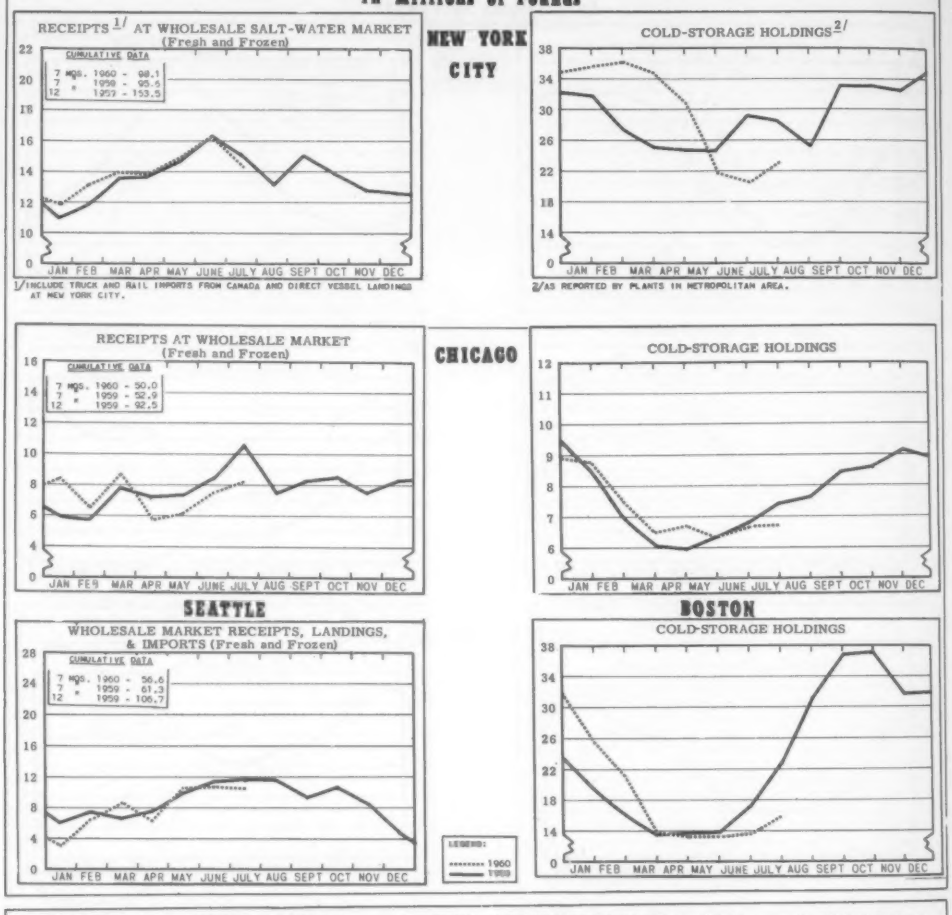


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

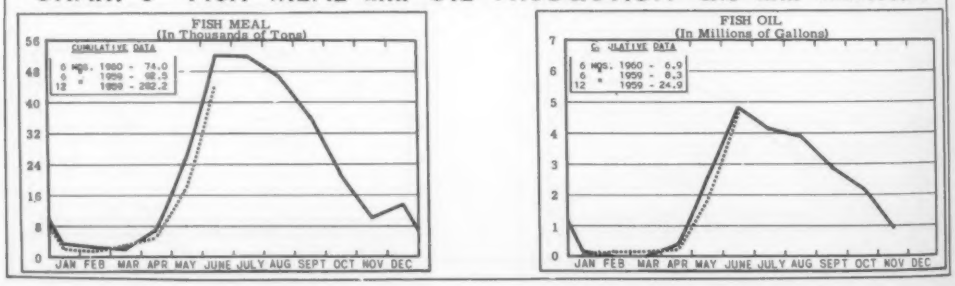
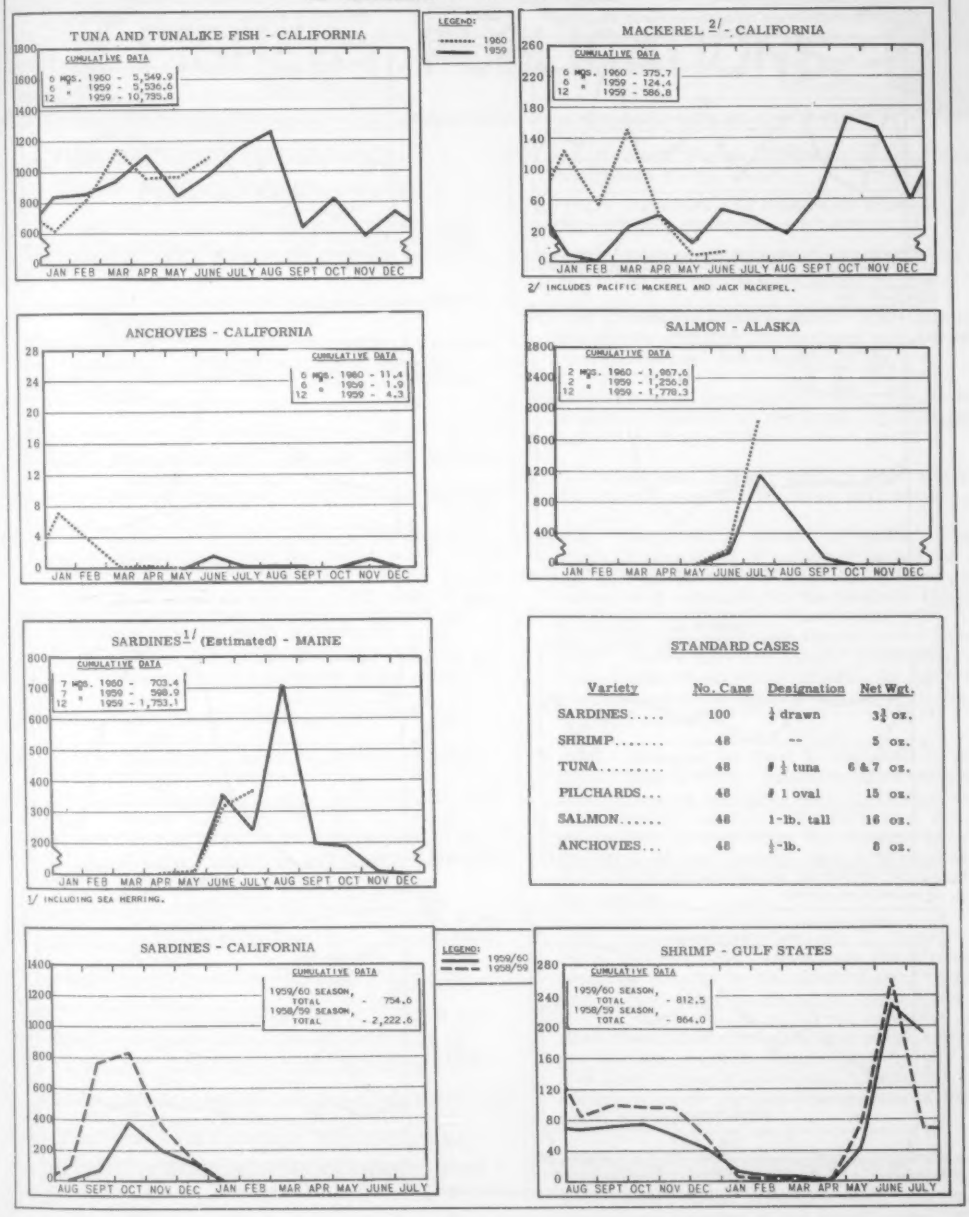


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases

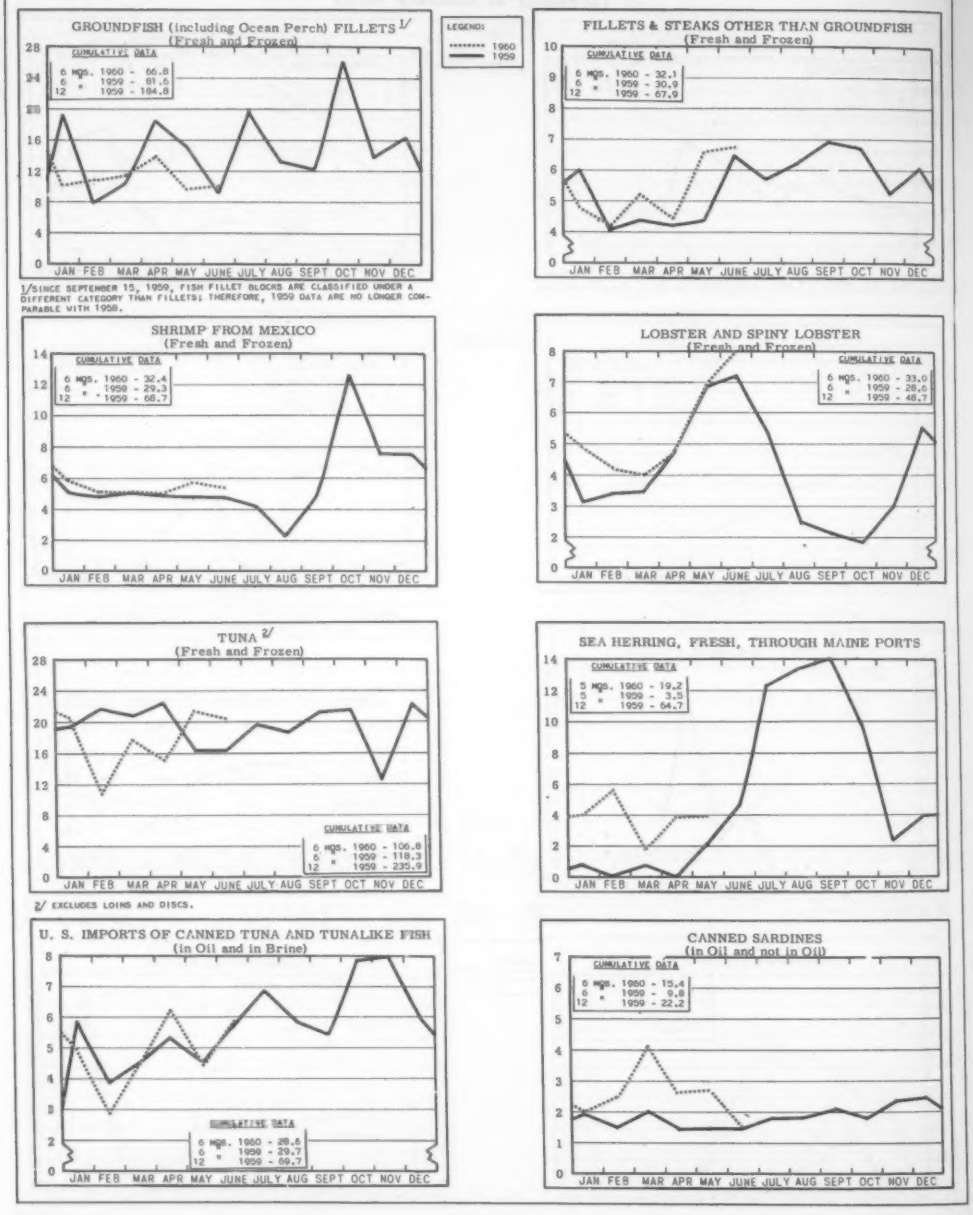


STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.

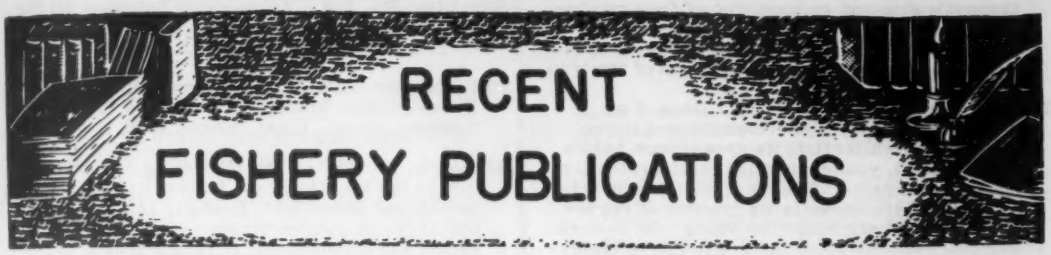
CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



1/ SINCE SEPTEMBER 15, 1959, FISH FILLET BLOCKS ARE CLASSIFIED UNDER A DIFFERENT CATEGORY THAN FILLETS; THEREFORE, 1959 DATA ARE NO LONGER COMPARABLE WITH 1958.

2/ EXCLUDES LOINS AND DISCS.



FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SL - BRANCH OF STATISTICS LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-2260 - Massachusetts Landings, 1959 Annual Summary, 13 pp.
CFS-2291 - Shrimp Landings, 1959 Annual Summary, 22 pp.
CFS-2315 - Massachusetts Landings, February 1960, 5 pp.
CFS-2319 - Maryland Landings, April 1960, 3 pp.
CFS-2327 - New York Landings, April 1960, 4 pp.
CFS-2328 - Florida Landings, April 1960, 7 pp.
CFS-2329 - Maine Landings, April 1960, 3 pp.
CFS-2330 - Shrimp Landings, February 1960 6 pp.
CFS-2332 - Rhode Island Landings, April 1960, 3 pp.
CFS-2333 - Mississippi Landings, March 1960, 2 pp.
CFS-2334 - California Landings, February 1960, 4 pp.
CFS-2337 - California Landings, March 1960, 4 pp.
CFS-2335 - Texas Landings, April 1960, 3 pp.
CFS-2338 - Frozen Fish Report, May 1960, 8 pp.
CFS-2339 - Alaska Fisheries, 1959 Annual Summary, 8 pp.
CFS-2340 - Ohio Landings, April 1960, 2 pp.
CFS-2341 - New Jersey Landings, May 1960, 3 pp.
CFS-2342 - Massachusetts Landings, March 1960, 5 pp.
CFS-2343 - South Carolina Landings, May 1960, 2 pp.
CFS-2344 - Shrimp Landings, March 1960, 6 pp.
CFS-2345 - Virginia Landings, May 1960, 4 pp.
CFS-2346 - North Carolina Landings, May 1960, 3 pp.
CFS-2347 - Mississippi Landings, April 1960, 2 pp.
CFS-2349 - Florida Landings, May 1960, 7 pp.
CFS-2350 - Georgia Landings, May 1960, 2 pp.

FL-28 (Revised January 1960)-Fish Baits, Their Collection, Care, Preparation, and Propagation, 27 pp., illus.

FL-46 (Revised March 1960)-Dealers in Trout and Pondfishes 33 pp.

FL-132 - Structure and Senses of Fishes, by Ralph Hile, 13 pp., illus., March 1960.

FL-191 - Wholesale Dealers and Producers of Bait Fish, 27 pp., March 1960.

FL-195 (Revised October 1959) - Partial List of Manufacturers of Fishing Gear and Accessories and Vessel Equipment, 27 pp.

FL-366 (Revised December 1958) - Recognizing Important Shrimp of the South, by William W. Anderson, 7 pp., illus.

FL-403 (Revised January 1960) - Fish and Wildlife Regulations for District of Columbia, 4 pp.

FL-489 - Haddock, by Albert C. Jensen, 9 pp., illus., March 1960. Describes the habits, growth, age determination, commercial fishery, utilization, and research on the haddock (Melanogrammus aeglefinus). The haddock is one of the most important food fishes in the North Atlantic, where they are caught principally by otter trawlers and long-liners. In 1958, haddock ranked second in volume and value in the New England fishery.

FL-490 - Sponges, by Paul S. Galtsoff, 18 pp., illus., March 1960. Discusses the widespread occurrence of sponges, their reproduction and regeneration, sponges of commerce, sponge cultivation, preparation for market, sale of sponges, fungus disease, and artificial sponges. A variety of photos and sketches add interest to the leaflet.

FL-491 - Sea Lamprey, by Lola T. Dees, 8 pp., illus., March 1960. Discusses the effects of lamprey attacks on the Great Lakes trout fishery; cooperative research on its control; natural history--spawning, larval and adult forms. Also discusses efforts to find commercial uses for the lampreys to compensate for the destruction they cause; mechanical, electrical, and chemical controls; and restoration of the lake trout resources.

FL-493 - The Bluefin Tuna-Trap Fishery of the Western Mediterranean Sea, by J. R. Thompson, 13 pp., illus., January 1960. Discusses the natural history of the bluefin tuna (Thunnus

thynnus); size and composition of trap catches; trap gear--placement, discription, and construction details; and trap operation. Included are a map of the area and diagrams of the trap.

FL-495 - Sea Horses, by Lola T. Dees, 9 pp., illus., April 1960. Describes the sea horse, the most unfishlike fish; its appearance, habits, reproduction, young, enemies, self-protection, culture, and value. The most unique characteristic of the sea horse is its manner of reproduction; the male bears the young. Of no commercial value as food, the sea horse is highly-prized as a curio.

Wholesale Dealers in Fishery Products (Revised):
SL- 2 - New Hampshire, 1959.
SL- 6 - New York Coastal Area, 1959.
SL- 9 - Delaware, 1959.
SL- 12 - Virginia, 1959.
SL- 16 - Florida, 1959.
SL- 19 - Louisiana (Coastal Area), 1959.
SL- 20 - Texas (Coastal Area), 1959.
SL- 22 - Oregon, 1959.
SL- 23 - Washington, 1959.
SL- 30 - Pennsylvania (Great Lakes Area), 1959.

Firms Canning, 1959 (Revised):
SL-103 - Tuna.
SL-103A- Tunalike Fishes.
SL-105 - Alewives.
SL-106 - Shad.
SL-109 - Caviar and Fish Roe.
SL-110 - Oysters.
SL-112 - Shrimp.
SL-113 - Crab Meat.
SL-119 - Squid.
SL-120 - Anchovies.

Firms Manufacturing, 1959 (Revised):
SL-151 - Fish Meal, Scrap, and Body Oil.
SL-151A- Fish Solubles and Homogenized Condensed Fish.
SL-153 - Fish Glue.
SL-156 - Pearl Essence.
SL-157 - Liver and Viscera Oil.
SL-159 - Fresh-Water Mussel-Shell Products.

SSR-Fish. No. 313 - Physical Oceanographic, Biological, and Chemical Data--South Atlantic Coast of the United States, Gill Cruise 9, by William W. Anderson and Jack W. Gehringer, 231 pp., illus,, September 1959.

SSR-Fish. No. 320 - Development and Operation of Television for Studying Fish Behavior in Otter Trawls, by John R. Clark, Robert Livingstone, Jr., and James M. Crossen, 25 pp., illus., December 1959.

SSR-Fish. No. 321 - Herring Spawning Surveys in Southeastern Alaska, by Bernard Einer Skud, 20 pp., illus., December 1959.

SSR-Fish. No. 323 - Indices of Mean Monthly Geostrophic Wind Over the North Pacific Ocean, by Laurence E. Eber and Oscar E. Sette, 112 pp., illus., September 1959.

SSR-Fish. No. 326 - Zooplankton Volumes off the Pacific Coast, 1957, by James R. Thrailkill, 60 pp., illus., November 1959.

SSR-Fish. No. 331 - The Eastern Hokkaido Land-Based Salmon Fishery of Japan, by Lorry M. Nakatsu, 13 pp., illus., March 1960.

SSR-Fish. No. 335 - Fish Marketing and Consumption in the Pacific Coast States, by S. Kent Christensen and Russell M. Boshell, 188 pp., December 1959. A comprehensive survey of the marketing and consumption of fresh, frozen packaged, and smoked fish and shellfish in California Oregon, and Washington. Consumer purchases and preferences for salmon, halibut, sole, rockfish, and crab in these forms are examined in detail. For example, household purchases of fresh fish and shellfish of these species are analyzed by areas within the states, by income and factors associated with income such as occupation, and education, by region of prior residence and duration of residence on the Pacific coast, by religious groups, and by retail outlet where these products were last purchased. Similar analyses are made of the household purchases of frozen packaged and smoked fish and shellfish. The retail distribution of fresh fish and shellfish in the Pacific Coast States is examined with special emphasis on the major problems confronting the retailers handling these products. The selling practices of retailers who stock frozen packaged fish are presented in some detail because of the large percentage of retail stores involved. A limited analysis is made of the retail distribution of smoked fishery products. The examination of the wholesale distribution of the fishery products included in the study is concerned with the type of wholesalers and type of product, the services offered to retailers, the storage facilities used by wholesalers, and their suggestions and opinions in connection with product improvement and promotion. A series of recommendations based on the study are presented. The important areas covered include: consumer education; retailer and wholesaler education; service improvement; and products improvement.

SSR-Fish. No. 337 - The Application of Paper Chromatography in Identifying Tuna Larvae, by Walter M. Matsumoto, 13 pp., illus., January 1960.

SSR-Fish. No. 342 - A Census of the California Gray Whale, by Raymond M. Gilmore, edited by Dale W. Rice, 34 pp., illus., May 1960. There are two distinct populations of living gray whales: one known as the California population, in the eastern North Pacific; the other, known as the Korean population, in the western North Pacific. A third population, now extinct, occupied the eastern North Atlantic. The present study concerns only the California population. The main objectives of this study were to (1) estimate the size of the total population and its present rate of increase, (2) determine the extent of the breeding grounds and their relative importance,

(3) determine the time and nature of the southward migration past California, and (4) establish a basis for detecting, in the future, any unusual changes in population size.

Sep. No. 596 - Control of Iron Sulfide Discoloration in Canned Shrimp (Xiphopeneus sp.) - Part I.

Sep. No. 597 - Construction and Operation of an Inexpensive Fish Smokehouse.

Frozen Processed Fish and Shellfish Consumption in Institutions and Public Eating Places. A series of reports on a survey of frozen processed fish and shellfish consumption in institutions and public eating places in ten cities, were issued in November 1959. This study was conducted in order to obtain information which could be used by the fishing industry to increase consumer demand for fishery products. The data collected should be useful in helping processors of frozen fish, shellfish, and portions to adjust their operations and services in order to reduce costs, provide better services, and develop new or expanded markets. Circular 66 explains the purpose of the study, survey methods and procedures, and reliability of study results. Circulars 67-76 contain data obtained for each city as a result of this survey. All of these circulars are available under the series title of "Frozen Processed Fish and Shellfish Consumption in Institutions and Eating Places."

Cir. 66 - Survey Methods and Procedures, 24 pp.
Cir. 67 - Atlanta, Georgia, 56 pp.
Cir. 68 - Chicago, Illinois, 64 pp.
Cir. 69 - Cleveland, Ohio, 52 pp.
Cir. 70 - Denver, Colorado, 54 pp.
Cir. 71 - Houston, Texas, 51 pp.
Cir. 72 - Los Angeles, California, 66 pp.
Cir. 73 - New York, New York, 61 pp.
Cir. 74 - Omaha, Nebraska, 52 pp.
Cir. 75 - Portland, Oregon, 53 pp.
Cir. 76 - Springfield, Massachusetts, 50 pp.

Bureau Of Sport Fisheries and Wildlife Pesticide-Wildlife Review, 1959, by James B. DeWitt and John L. George, Circular No. 84, 41 pp., illus., January 1960. Discusses the scope of the pesticide-wildlife problem; reviews the current activities and findings of the Bureau of Sport Fisheries and Wildlife, cooperators, and others in this field; summarizes the legislative developments of the past few years; and gives the Bureau's recommendations for use of pesticides with minimum harm to wildlife.

Progress in Sport Fishery Research, 1959, Fish and Wildlife Circular 81, 83 pp., illus., 1960.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-6a	Mexico's Fish and Shellfish Canning Industry, 1959.
MNL-7a	Mexican Fisheries, 1959.
MNL-8a	Portuguese Fishing Industry, 1959.
MNL-20	Angola's Fishing Industry, 1959.
MNL-21	South West Africa's Fisheries, 1959.
MNL-22	Union of South Africa's Fisheries, 1959.
MNL-23	Fisheries of Chile.
MNL-24	Mexican Fish Meal Plants.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

(Baltimore) Monthly Summary - Fishery Products, February 1960, 10 pp. (Market News Service, U. S. Fish and Wildlife Service, 400 E. Lombard St., Baltimore 2, Md.) Receipts at Baltimore by species and by states and provinces for fresh- and salt-water fish and shellfish; total receipts by species and comparisons with previous years; and wholesale prices on the Baltimore market; for the month indicated.

California Fishery Products Monthly Summary, May 1960; 13 pp. each. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg. San Pedro Calif.) California Cannery receipts of tuna and tunalike fish, mackerel, and anchovies; pack of canned tuna, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, May and June 1960, 13 pp. each. (Market News Service, U.S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the months indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, May 1960, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; sponge sales; and imports at Port Isabel and Brownsville, Tex., from Mexico; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, June 1960, 4 pp. (Market News Service, U.S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with comulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, May 1960, 22 pp. (Market News Service, U.S. Fish and Wildlife Service, 10 Commonwealth Pier,

Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for May 1960, 17 pp. (Market News Service, 155 John St., New York 38, N.Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, May and June 1960, 9 and 11 pp. respectively. (Market News Service, U.S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Ore.), wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the months indicated.

Effects of Turbidity-Producing Materials in Sea Water on Eggs and Larvae of the Clam, VENUS (MERCENARIA) MERCENARIA, by Harry C. Davis, 7 pp., illus., printed. (Reprinted from Biological Bulletin, vol. 118, no. 1, February 1960, pp. 48-54.) U.S. Bureau of Commercial Fisheries, Biological Laboratory, Milford, Conn.

Use of Chemicals to Control Shellfish Predators, 2 pp., printed. (Reprinted from Science, vol. 131, no. 3412, May 20, 1960, pp. 1522-1523.) U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, Milford, Conn.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM MARINE MAMMAL RESEARCH, U.S. FISH AND WILDLIFE SERVICE, SAND POINT NAVAL AIR STATION, SEATTLE, WASH.

Aquarial Observations on Feeding of Kamchatka Crab, by D. N. Logvinovich, 19 pp. (Translated by Leda V. Sagan from Vladivostok, Izvestiia Tikhookeanskogo N.-I. Instituta Rybongo Khozlaistva I Okeanografii, vol. 19, 1945, pp. 79-97.)

Lipids of the Muscle of Tuna, THYNNUS ORIENTALIS. IV--Cephalins of the Dark-Colored and Ordinary Muscles, by Hisanao Igarashi, Koicha Zama, and Muneo Katada, 4 pp. (Translated by George Kudo from the Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 5, 1957, pp. 278-281.)

Using Results of Calculating the Growth Rate of Atlantic and Scandinavian Herrings for Distinguishing Schools and for Studying Migration Routes, by N. P. Birlukov, 8 pp. (Translated by Leda V. Sagan from Voprosy Ikhtiologii, no. 6, 1956, pp. 47-54.)

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, BIOLOGICAL LABORATORY, SEATTLE, WASH.

Data on Salmon Predation:
(1)-On Predation on Salmon by Fur Seals, by Hokuyo Bosen Kyogi Kai (North Pacific Mothership Association), 5 pp., in Japanese, March 15, 1959. (Complete Translation by Hack Chin Kim.)
(2)-Predation on Salmon by Harbor Seal and Sea Lions, by Kozo Ikeyama, 7 pp. (Translated by Hack Chin Kim from Suisankai--Journal of the Fisheries Society of Japan--February 1935.)
(3)-Predation on Salmon by Belugas, Dolly Varden and Mackerel Sharks, by Hokuyo Bosen Kyogi Kai (North Pacific Mothership Association), 25 pp., March 15, 1959. Consists of summary translations in Japanese of Russian articles: "The Belugas Whose Main Food is Salmon," by A. G. Tomilin; "Measures for Increasing Far Eastern Salmon Stocks," by K. I. Popov; and "Miscellaneous Information on Predation on Various Far Eastern Salmon Species," by G.V. Nikolsky. Also contains "Notes on the Salmon Shark as a Predator of Salmon (Oncorhynchus sp.) in the North Pacific Ocean," by Osamu Sano. (Summary translations in English by Hack Chin Kim.)
(4)-On Predation on Salmon by Fur Seals and Harbor Seals, by Hokuyo Bosen Kyogi Kai (North Pacific Mothership Association), 6 pp., illus., (Summary translation by Hack Chin Kim.)

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D.C.

Definition of Haddock Stocks of the Northwestern Atlantic, by John R. Clark and Vadim D. Vladykov, Fishery Bulletin 169 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 60), pp. 283-296, illus., printed, 20 cents, 1960. Vertebrae of haddock from 16 fishing grounds in the northwestern Atlantic were counted to determine whether such counts could be used to identify population units. Comparison of average numbers of vertebrae from the different areas showed significant differences, which could be related to surface water temperatures on the grounds during the spawning time. The relationship is consistent with that developed for northeastern Atlantic haddock from published European data. Age data which were available for the samples from Georges and Browns Banks demonstrated that the differences in average vertebral numbers among the individual year classes on each bank could be attributed

to differences in temperatures in the spawning period in different years. Consideration of average vertebral numbers of the various population units suggests the following as major haddock stocks of the northwestern Atlantic: Newfoundland; eastern, central, and western Nova Scotia, and New England.

"Techniques for Studying Herring Scales and Otoliths," by Charles M. Larsen and Bernard E. Skud, article, Progressive Fish-Culturist, vol. 22, no. 2, April 1960, pp. 85-86, illus., printed, 25 cents. This paper describes (1) a technique for mounting and photographing Atlantic herring (Clupea harengus) scales and (2) a technique for clearing and photographing herring otoliths. By using these methods of handling and mounting scales and otoliths, clear large prints may be obtained directly with a photographic enlarger. This provides a rapid, efficient, and inexpensive procedure for the examination of scales and otoliths for racial as well as age and growth studies.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ADVERTISING:

Advertising for Profit and Prestige, by D. Peter Bowles, Small Marketers Aids No. 56, 4 pp., printed. Small Business Administration, Washington 25, D.C., June 1960.

ALASKA:

Regulations of the Alaska Board of Fish and Game for Commercial Fishing in Alaska, 95 pp., printed. Alaska Department of Fish and Game, 229 Alaska Office Bldg., Juneau, Alaska, 1960. Contains definitions of terms used in the regulations, and outlines provisions for commercial fishing in Alaska and international waters. The general provisions section discusses regulations such as license requirements for fishermen, vessels, and gear; reports from operators; inspection of fishery establishments; prohibition of explosives, chemicals, and poisons; salmon, bottom fish, smelt, herring, shellfish, whitefish, sheefish, and char fisheries requirements; subsistence fishery provisions; and emergency regulations.

ALGAE:

"Chemical Studies on Marine Algae. XII--The Free Amino Acids in Several Species of Marine Algae," by Mitsuzo Takagi and Mitsuo Kuriyama, article, Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 10, May 1959, pp. 72-76, printed in English. Bulletin of the Faculty of Fisheries, Hokkaido University, Hokkaido University, Hokodate, Japan.

"Pourquoi Garder le Silence sur les Algues Marines et Leurs Mille Emplois?" (Why Keep Silent About the Marine Algae and Its Thousand Uses?), article, France Peche, vol. 50, no. 40, May 1960, pp. 17-21, illus., printed in French. France Peche, 84 Rue Carnot, Lorient, France.

ANTIBIOTICS:

Antioxidant for Fish, by Eitaro Tsuboi and Takayuki Tsuboi, Japanese Patent Number 2832, April 22, 1959, printed in Japanese. Japanese Patent Office, Tokyo, Japan.

"Antioxidant Treatment of Rainbow Trout," by F. Bramsnaes, H. Brennum, and H. Sorensen, article, Bulletin de L'Institut International du Froid, vol. 39, 1959, p. 894, printed. International Institute of Refrigeration, 177 Boulevard Malesherbes, Paris 17, France.

"Comparative Effectiveness of Various Chlortetracycline (CTC)-Treatments in Keeping Quality of Trawled Fish and CTC Residue on Treated Fish," by Yasuo Yone, Tetuo Tomiyama and Shichiro Hamada, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 25, June 1959, pp. 156-162, printed in Japanese with English abstracts. Japanese Society of Scientific Fisheries, c/o Tokaiku Suisan Kenkyujo, Tsukishima, Koyobashi, Tokyo, Japan.

"Plant-Scale Applications of Chlortetracycline for Fish Preservation," by Lionel Farber and Peter Leke, article, Proceedings of the Gulf and Caribbean Fisheries Institute, vol. 10, 1957, pp. 72-79, printed. University of Miami, The Marine Laboratory, #1 Rickenbacker Causeway, Miami 49, Fla.

ANTIOXIDANTS:

"The Application of Antioxidants to Fish Oils to Increase their Stability," by Yu S. Davydova and V. I. Treshcheva, aritcle, Rybnoe Khoziaistvo, vol. 34, 1958, pp. 70-74, printed. Souizpechati Otdelu "Zhurnal-Pochtoi," Moscow Zh-240, U. S. S. R.

BACTERIOLOGY:

"Nutrition and Metabolism of Marine Bacteria. VII--Growth Response of a Marine Flavobacterium to Surface Active Agents and Nucleotides," by Robert A. MacLeod, H. Hogenkamp, and E. Onofrey, article, Journal of Bacteriology, vol. 75, April 1958, pp. 460-466, printed. Journal of Bacteriology, Williams & Wilkins Co., 428 E. Preston St., Baltimore 2, Md.

BEHAVIOR OF FISH:

"Studies on the Shoaling Behavior of Fish. I--Responses of Two Species to Changes in Illumination and to Olfactory Stimuli," by D. M. Steven, article, Journal of Experimental Biology, vol. 36, 1959, pp. 261-280, printed. Journal of Experimental Biology, Cambridge University Press, 200 Euston Rd., London N.W. 1, England.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

BIOCHEMISTRY:

"Biochemistry of Fishes," by H. L. A. Tarr, article, Annual Review of Biochemistry, vol. 27, 1958, pp. 223-244, printed. Annual Review of Biochemistry, Stanford University, Stanford, Calif.

"Fat Hydrolysis in Frozen Fish. 2--Relation to Protein Stability," by Doris I. Fraser and W. J. Dyer, article, Progress Reports of the Atlantic Coast Stations, no. 72, September 1959, pp. 37-39, printed. Fisheries Research Board of Canada, Atlantic Fisheries Experimental Station, Halifax, Nova Scotia, Canada.

"Protein Value and Amino-Acid Balance of Condensed Herring Solubles and Spontaneously Heated Herring Meal Chick Experiments," by B. Lakevela. Herring Oil and Meal Ind. Research Inst., Straumsgrend, Norway.

CALIFORNIA:

California Fish and Game, vol. 46, no. 3, July 1960, 140 pp., illus., printed. Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif. Includes, among others, these articles: "The Age and Growth of Striped Bass (Roccus saxatilis) in California," by John B. Robinson; "The Importance of the Ocean Sport Fishery to the Ocean Catch of Salmon in the States of Washington, Oregon and California," by Henry O. Wendler; and "Tuna Tagging in the Eastern Tropical Pacific, 1952-1959," by C. E. Blunt, Jr. and James D. Messersmith.

Fishing Among the Indians of Northwestern California, by A. L. Kroeber and S. A. Barrett, Anthroplogical Records, vol. 21, no. 1, 210 pp., illus., printed, $4.50. University of California, Berkeley, Calif., 1960.

CANADA:

Fisheries Statistics of Canada, 1958 (British Columbia), 20 pp., illus., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, April 1960. Contains tables giving the quantity and value of fishery products landed in British Columbia in 1939-58, by species and by fisheries districts; quantity and value of manufactured fishery products for 1957-58; capital equipment in the primary fisheries operations, 1957-58; and number of persons engaged in primary fisheries operations, 1957-58.

Fisheries Statistics of Canada, 1958 (Newfoundland), 30 pp., illus., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, April 1960. This report consists of tables giving the value of fishery products by species, 1955-58; quantity and value of fishery products by species, fisheries areas, and major ports, 1957-58; capital equipment employed in primary operation by areas, 1957-58; and number of persons engaged in the fisheries by areas, 1957-58.

"New Fisheries for Newfoundland," by Michael F. Harrington, article, C-I-L Oval, vol. 29, no 1 February 1960, pp. 2-6, illus., printed. C-I-L Oval, P. O. Box 10, Montreal, Canada. Describes the efforts of the Newfoundland provincial government at revitalizing the fishing industry in the La Scie section of the northeastern coast. Dependency on the time-honored dried cod has been discarded; modernization and centralization are the theme. Accomplishments include the use of larger, powered fishing vessels; increased exploratory fishing; new stations for biological and technical research; an educational program for fishermen; provision of marine railways; and facilities for holding and freezing bait. Fishing port facilities have been developed; a processing plant expected to handle 6 million pounds of fish annually, has been constructed; and a fish meal plant is in operation. All of these represent progress in area development and the economic rehabilitation of Newfoundland.

CANNING:

"Conservas, La Industria Noruega en el Ano Ultimo" (Canning, The Norwegian Industry During the Past Year), article, Industrias Pesqueras, vol. 34, no. 792, April 15, 1960, pp. 131-132, printed in Spanish, Industrias Pesqueras, Policarpo Sanz, 21-2, Vigo, Spain.

"Prevention of Adhesion of Canned Salmon Meat," by Toyo-o Takahashi, and Makoto Takei, article, Bulletin of Tokai Regional Fisheries Research Laboratory, no. 24, June 1959, pp. 57-65, printed in Japanese with English abstracts. Tokai Regional Fisheries Research Laboratory, Tsukishima, Chuo-ku, Tokyo, Japan.

COD:

"Browning Reactions and the Loss of Free Amino Acid and Sugar from Lyophilized Muscle Extractives of Fresh and Chill-Stored Codling (Gadus Callarias), by N. R. Jones, article, Food Research, vol. 24, November-December 1959, pp. 704-710, printed. Department of Food Technology, University of California, Davis, Calif.

"The Effect of Sodium Chloride on Proteolysis and on the Fate of Amino Acids Present in the Muscle of Codfish (Gadus Callarias)," by E. Bilinski and H. Fougere, article, Journal of the Fisheries Research Board of Canada, vol. 16, October 1959, pp. 747-753, printed. Journal of Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

COMMON MARKET:

"Les Pays du Marche Commun" (The Common Market Countries and Their Fisheries), article, La Peche Maritime, vol. 39, no. 987, June 1960,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

pp. 344-349, illus., printed in French. La Peche Maritime, 190 Blvd. Haussmann, Paris, France.

CRAB:

"The Pacific Crab Canning Industry of British Columbia," by Elliot B. Dewberry, article, Food Manufacture, part 1, vol. 34, November 1959, pp. 425-429; part 2, vol. 34, December 1959, pp. 474-477, printed. Food Manufacture, Leonard Hill, Ltd., Stratford House, 9 Eden St., London N.W. 1, England.

CUBA:

Gorgonias del Litoral de la Costa Norte de Cuba (Anthozoans of the Shores of Northern Cuba), no. 1, 24 pp., illus., printed in Spanish. Acuario Nacional Sibarimar, Centro Experimental, Ave. 1ª #6002, Miramar, Marianao, Havana, Cuba, 1959.

Salinidad, Temperatura y Plancton de las Aguas Costeras de Isla de Pinos (Salinity, Temperature, and Plankton of the Waters of the Isle of Pines Area), by Jose A. Suarez-Caabro, Monograph 7, 26 pp., illus., printed in Spanish with English summary. Laboratorio de Biologia Marina, Universidad Catolica de Santo Tomas de Villanueva, Marianao, Cuba, May 1959.

DECOMPOSITION:

"Chemical Indices of Decomposition in Haddock," by Fred Hillig, L. R. Shelton, Jr., and J. H. Loughrey, article, Journal of the Association of Official Agricultural Chemists, vol. 42, November 1959, pp. 702-708, printed. Association of Official Agricultural Chemists, Inc., Box 540, Benjamin Franklin Station, Washington 4, D.C.

DEHYDRATION:

"Commercial Applications of the Freeze-Drying Process for Dehydration of Food Products," article, Le Revue de la Conserve, no 7, September 1957, p. 67, printed in French. Le Revue de la Conserve, 1 Rue de la Réale, Paris 1, France.

"Design of Freeze-Drying Equipment for the Dehydration of Foodstuffs," by W.R. Smithies and T. S. Blakley, article, Food Technology, vol. 13, November 1959, pp. 610-613, printed. Food Technology, The Garrard Press, 510 North Hickory, Champaign, Ill.

DENMARK:

GALATHEA Reports (Scientific Results of the Danish Deep-Sea Expedition Round the World, 1950-1952), vols. 1-3; vol. 1, 1957-59, 260 pp.; vol. 2, 1956, 253 pp.; and vol. 3, 1959, 88 pp. + plates, illus., printed. Danish Science Press, Copenhagen, Denmark.

ELECTRICAL FISHING:

"Experience in Measuring the Conductivity and Determining the Hardness of Water in Connection with Electrofishing and Evaluation of Water," by G. Buhse, article, Der Fischwirt, vol. 8, no. 6, June 1958, p. 160, printed in German. Der Fischwirt, Deutscher Fischerei-Verband, Neuerwall 72, Hamburg 36, Germany.

"New Type of Tuna Hook in Electrofishing," by K. Schultz, Schiff und Hafen, vol. 10, no. 9, September 1958, p. 752, printed in German. Schiff und Hafen, Schiffbau-Technische Gesellschaft, Neuerwall 32, Hamburg 36, Germany.

FATTY ACIDS:

"The Origin of the Marine Polyunsaturated Fatty Acids Composition of Some Marine Plankton," by P. B. Kelly, R. Reiser, and D. W. Hood, article, Journal of the American Oil Chemists' Society, vol. 36, no. 3, March 1959, pp. 104-106, printed. Journal of the American Oil Chemists' Society, 35 E. Wacker Dr., Chicago 1, Ill.

"The Unsaturated Fatty Acids in Menhaden Body Oil: The C_{18}, C_{20}, and C_{22} Series," by W. Stoffel and E. H. Ahrens, Jr., article, Journal of Lipid Research, vol. 1, January 1960, pp. 139-146, printed. Journal of Lipid Research, University Publishers, Inc., 59 East 54th St., New York 22, N. Y.

FATTY OILS:

"Fatty Oils of Aquatic Invertebrates, XIX--Non-conjugated Sterols and Other Unsaponifiable Components in the Fatty Oil from Tonna Luteostoma," by Tatsuo Tanaka and Toyama Yoshiyuki article, Memoirs of the Faculty of Engineering, Nagoya University, vol. 10, 1958, pp. 77-83, printed. Nagoya University, Furo-Cho, Chikusaku, Nagoya, Japan.

FISH FINDER:

"Electronic Sector-Scanning Asdic: An Improved Fish-Locator and Navigational Instrument," by D. G. Tucker and V. G. Welsby, article, Nature, vol. 185, January 30, 1960, pp. 277-279, printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

FISH FLOUR:

"La Harina de Pescado como Alimento Humano" (Fish Flour for Human Consumption), by Fidel de Varona C., article, Mar y Pesca, vol. 3 nos. 7 and 8, April-May 1960, pp. 20-21, 41-42, illus., printed in Spanish. Mar y Pesca, Edificio I.N.R.A., Noveno Piso, Plaza Civica, Havana, Cuba.

FISH MEAL:

"Comparative Values of Different Fish Meals and Fish Factors in Broiler Feeds," by E. L. Stephenson and Lionel Barton, article, Arkansas Farm Research, vol. 8, no. 4, July-August 1959, printed. Arkansas Farm Research, Arkansas Agricultural Station, University of Arkansas, Fayetteville, Ark.

FISH OILS:

"Fish Oils in the Painting Industry. Part 1," by J. Huesa Lope, article, Grasas y Aceites, vol.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

8, no. 5, 1957, p. 226, printed in Spanish. Grasas y Aceites, Instituto Especial de la Grasa y Sus Derivados, Seville, Spain.

FISH SOLUBLES:
"The Effect of Dehydrated Alfalfa Meal, Dried Brewers Yeast, Condensed Fish Solubles and Fermentation Residue on the Reproductive Performance of Turkeys," by C. H. Whiteside and others, article, Poultry Science, vol. 39, January 1960, pp. 77-81, printed. Poultry Science Publishers, Kansas State College, Manhattan, Kans.

FISH STICKS:
"Permits Deep-Fat Browning Without Deep-Fat Methods," article, Food Processing, vol. 20, April 1959, p. 81, printed. Food Processing, Putnam Publishing Company, 111 E. Delaware Pl., Chicago, Ill. Infrared cooking of fish sticks permits deep-fat browning without deep-fat cooking methods. Only small amounts of oil are sprayed on fish sticks during cooking operation. A 7-foot long infrared oven is turning out approximately 400 pounds of processed fish sticks are properly browned and cooked before being frozen.

FISH TRANSPORTATION:
The Control of pH by Buffers in Fish Transport, by William N. McFarland and Kenneth S. Norris, 20 pp., illus., printed. (Reprinted from California Fish and Game, October 1958, pp. 291-310). California Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif. The heavy fishing pressure on our Nation's streams and lakes requires large-scale propagation and planting of fish, and has led to the development of the complex modern fish tanks. One of the major problems confronting the fisheries biologist has been the development of better means of transporting live fish. This study has been separated into two parts: first, the practical aspects of buffer application to live fish transport in water; and second, the theoretical and experimental background underlying the practical methods. In summary, the authors state that "Chemical buffers are of importance in the control of acidity changes during fish transport, resulting from respiration and accumulation of waste products. A biochemical buffer, tris-hydroxymethyl-aminomethane, has been found valuable for pH control, both in closed and open-system fish transport. Inorganic buffers either caused heavy precipitation of salts in sea water or buffered outside the optimum pH range for marine fish." Methods of aplication in transport are discussed.

FISHING TECHNIQUES:
"Les Developpements des Techniques de Peche de Differents Pays dont l'U. R. S. S." (The Developments of Fishing Techniques in Different Countries Including the U. S. S. R.), article, France Peche, vol. 50, no. 40, May 1960, pp. 23-24, illus., printed in French. France Peche, 84 Rue Carnot, Lorient, France.

FLORIDA:
Hydrographic Data from the Inshore Bays and Estuaries of Everglades National Park, Florida, 1957-1959, by Durbin Tabb, David Dubrow, and Raymond Manning, 26 pp., illus., processed. Florida State Board of Conservation, W. V. Knott Bldg., Tallahassee, Fla.

Report on the Marine Plants, Bottom Types and Hydrography of the St. Lucie Estuary and Adjacent Indian River, Florida, by Ronald C. Phillips and Robert M. Ingle, Special Scientific Report No. 4, 79 pp., processed. Florida State Board of Conservation, Marine Laboratory, Maritime Base, Bayboro Harbor, St. Petersburg, Fla., March 1960.

FOOD AND AGRICULTURE ORGANIZATION:
Financial Assistance Schemes for the Acquisition of Improvement of Fishing Craft, by C. Beever and K. Ruud, FAO Fisheries Studies No. 9, 121 pp., printed, US$ 1. Food and Agriculture Organization of the United Nations, Rome, Italy, 1960.

General Fisheries Council for the Mediterranean, Proceedings and Technical Papers, No. 5, 539 pp., illus., printed in French and English, $5. Food and Agriculture Organization of the United Nations, Rome, Italy, 1959. (For Sale by International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.) This volume is divided into two parts. The first part covers the proceedings of the fifth meeting held at FAO headquarters, Rome, October 13-18, 1958--including a list of participants, a summary record of the plenary sessions, and a general report on the Council's activities in marine resources, fishery production, utilization of fishery products, inland waters, and economics and statistics. The second part contains the 75 technical papers presented at the meeting.

FRANCE:
"La Conserve du Maquereau a Boulogne" (Mackerel Canning at Boulogne), article, La Peche Maritime, vol. 39, no. 986, May 1960, pp. 266-267, illus., printed in French. La Peche Maritime, 190 Blvd. Haussman, Paris, France.

"L'Evolution de Notre Industrie Thoniere" (The Development of Our Tuna Industry), by L. Plouas, article, La Peche Maritime, vol. 39, no. 986, May 1960, pp. 268-269, printed in French. La Peche Maritime, 190 Blvd. Haussman, Paris, France.

"Rapport sur la Production de l'Industrie des Peches Maritimes en 1959" (Report on the Production of the Fishing Industry in 1959), article, France Peche, vol. 50, no. 40, May 1960, pp. 37-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

39, 41, 43, 45-47, 49-54, illus., printed in French. France Peche, 84 Rue Carnot, Lorient, France.

FREEZING:
"Congelacion del Pescado Entero--Las Experiencias Americanas a Bordo del 'Delaware'" (Freezing Whole Fish--American Methods Aboard the Delaware), article, Industrias Pesqueras, vol. 34, no. 792, April 15, 1960, pp. 128-130, printed in Spanish. Industrias Pesqueres, Policarpo Sanz, 21-2, Vigo, Spain.

"Freezing of Meat and Fish in Liquid Nitrogen," by N. Moiseeva and A. Piskareva, article, Kholodil'naia Tekhnika, no. 1, 1959, pp. 52-55, printed in Russian. Kholodil'naia Tekhnika, c/o Four Continent Book Corporation, 822, Broadway, New York 3, N. Y.

"Handling, Chilling and Freezing Fish. Part 2--Freezing Fish," by C. H. Castell, J. S. M. Harrison, and O. C. Young, article, Canadian Fisherman, vol. 47, February 1960, pp. 19-25, printed. Canadian Fisherman, Gardenvale, Quebec, Canada.

"Some Experiments on the Freezing and Thawing of Live Fish," by W. H. Martin, article, Contributions to Canadian Biology (Supplement to the 47th Annual Report of the Department of Marine and Fisheries, Fisheries Branch), Sessional Paper no. 39b, 1915, pp. 73-75, printed. Fisheries Research Board of Canada, Ontario, Canada.

FRESH-WATER INVERTEBRATES:
A Guide to Fresh-Water Invertebrate Animals, by T. T. Macan, 128 pp., illus., printed, 11s. 6d. (US$1.61). Longmans, Green and Co., Ltd., London, England, 1959.

FROZEN FISH:
"Thawing of Frozen Fish," article, Food Manufacture, vol. 34, September 1, 1959, p. 364, printed. Food Manufacture, Leonard Hill, Ltd., Stratford House, 9 Eden St., London N.W. 1, England.

FROZEN STORAGE:
"Studies on Muscle of Aquatic Animals, XXXVIII--The Influence of Frozen Storage on Muscle Protein of Yellowtail (Seriola quinqueradiata)," by Wataru Simidu, Usio Simidu and Hiroyoshi Terasima, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 11, 1958, pp. 700-703, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-Chome, Tokyo, Japan.

GENERAL:
Fisheries (Fish Farming, Fisheries Management), vol. III--Conservation-Propagation-Regulation, by Milo Moore, Ken McLeod, and Don Reed, 345 pp., illus., printed. Washington State Department of Fisheries, Seattle, Wash., February 1960. Comprises revised editions of volumes I and II, plus several new chapters. An excellent text for fisheries students, this volume is also of vital interest to members of the fisheries and allied industries. Covers, with the aid of many fine photos, charts, and drawings, every aspect of development and conservation of fish and shellfish resources in the State of Washington. Its 22 chapters include material on fisheries of the Columbia River Basin, oyster and clam farming, pollution and predator control, the salmon fisheries, international fisheries, and many other pertinent topics.

GERMAN FEDERAL REPUBLIC:
Berichte der Deutschen Wissenchaftlichen Kommission fur Meeresforschung, Neue Folge, Band XV, Heft 3, 1959, 117 pp., illus., printed in German with English summaries. Contains these articles: "Biologisch-Statistische Untersuchungen uber die Deutsche Hochseefischerei. IV--Die Entwicklung der Hochseefischerei in Fangtechnischer, Raumlicher und Biologischer Hinsicht. 4--Leistungsfahigkeit und Fangertrage der Deutschen Fischdampferflotte 1885-1955" (Biological-Statistical Investigations of the German High Seas Fishery in Catching, Exploratory, and Biological Aspects. 4--Effort and Catch of German Trawlers 1885-1955), by Johannes Lundbeck; "Die Trubungsverhaltnisse in der Irminger See im Juni 1955 und Ihre Hydrographischen Urschen" (Turbidity Conditions in the Irminger Sea (Iceland-Greenland) in June 1955 and their Hydrographic Consequences), by Joachim Joseph; and "Die Planktonverteilung in der Irminger See im Juni 1955" (Plankton Distribution in the Irminger Sea in June 1955), by Max Gillbricht.

GULF OF MEXICO:
"A Deep-Water Coral Reef in the Gulf of Mexico," by Donald R. Moore and Harvey R. Bullis, Jr., article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 10, no. 1, 1960, pp. 125-128, printed. Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

Fishing on the Gulf Coast, by Howard Mitcham, 103 pp., illus., printed, $2.00. Hermit Crab Press, 3333 Elysian Fields Ave., New Orleans 22, La., 1959.

HARPOONS:
"A Proposito di un Arpione Rinvenuto su un Tonno Pescato in Tunisia e Descritto de Heldt nel 1932--Arpioni in Uso Nello Stretto di Messina" About a Harpoon Found in a Tuna Caught in Tunisia and Described by Heldt in 1932--Harpoons Used in the Messina Strait), by Pasquale Arena, article, Bollettino di Pesca, Piscicoltura e Idrobiologia, vol. 35, no. 14, January-June 1959, pp. 95-99, illus., printed in Italian with English summary. Instituto Poligrafico Dello Stato,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Rome, Italy. About a Harpoon found in a tuna caught in Tunisia and described by Heldt in 1932. In comparison with this recovery, the author describes the harpoons used in the Messina Strait in Swordfish and tuna fishing, in order to establish the tuna's identity and place of origin.

HERRING:

"L'Avenir de la Peche du Hareng" (The Future of the Herring Fishery), article, La Peche Maritime, vol. 39, no. 987, June 1960, pp. 335-336, illus., printed in French. La Peche Maritime, 190 Blvd. Haussmann, Paris 8e, France.

"Chemical Studies on the Herring (Clupea harengus), II--The Free Amino-Acids of Herring Flesh and Their Behavior During Post-Mortem Spoilage," by R. B. Hughes, article, Journal of the Science of Food and Agriculture, vol. 10, October 1959, pp. 558-564, printed. Journal of the Science of Food and Agriculture, Society of Chemical Industry, 14 Belgrave Square, London, S.W. 1, England.

"Chemical Studies on the Herring (Clupea harengus). III--The Lower Fatty Acids," by R. B. Hughes, article, Journal of the Science of Food and Agriculture, vol. 11, January 1960, pp. 47-53, printed. Journal of the Science of Food and Agriculture, Society of Chemical Industry, 14 Belgrave Square, London, S.W. 1, England.

"Drift-Netting for Herring Along the South Coast of Newfoundland," by S. N. Tibbo, article, Progress Reports of the Atlantic Coast Stations, no. 72, September 1959, pp. 27-31, printed. Fisheries Research Board of Canada, Atlantic Fisheries Experimental Station, Halifax, Nova Scotia, Canada.

"A Specific Gravity Method for Determining Fitness (Condition) in Herring (Clupea pallasii)," by Albert Tester, article, Journal of the Fisheries Research Board of Canada, vol. 4, February 1940, pp. 461-471, printed. Fisheries Research Board of Canada, Ottawa, Canada.

ICE:

Fish Needs Plenty of Ice, 6 pp., illus., printed. Department of Scientific and Industrial Research, Charles House, 5-11 Regent St., London, S.W. 1, England. A practical booklet for wholesalers and dealers in fresh fish explaining the causes of deterioration, the length of storage life, maintaining freshness between landing and selling, and the need for using ice at all times.

INDONESIA:

"Indonesia," by Soepanto Koesoemowinoto, article, Pacific Fisherman, vol. 58, January 25, 1960, pp. 153-154, printed. Pacific Fisherman, 500 Howard St., San Francisco 5, Calif. Building the industry, providing credit for fishermen, improving marketing, and carrying out research are the topics discussed.

IRRADIATION PRESERVATION:

Food Preservation by Irradiation (Supplement to CTR-357), OTS Selective Bibliography, 5 pp., processed, 10 cents. Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., March 1960. A bibliography of reports listed in the two OTS monthly abstract journals: U. S. Government Research Reports and Technical Translations. Includes publications on various aspects of irradiation preservation of food by the Atomic Energy Commission, other research organizations, and various foreign agencies.

ITALY:

Statistica della Pesca e della Caccia, 1959 (Fishing and Hunting Statistics, 1959), 160 pp., illus., printed in Italian. Instituto Centrale di Statistica, Rome Italy, 1959.

LATIN AMERICA COMMON MARKET:

Progress Report by the Secretariat on the Common Market Programme, E/CN. 12/AC. 45/3, 45 pp., processed. Distribution and Sales Section, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, March 15, 1960, limited distribution. A report presented at the Seventh Session, Committee of the Whole, Economic Commission for Latin America, at Santiago, Chile, March 28, 1960. Discusses plans and accomplishments of this UNESCO Commission to establish the Latin American Common Market and the Latin American Free-Trade Association. Reports on the Montevideo Treaty February 18, 1960, establishing the Latin American Free-Trade Association, signed by Argentina, Brazil, Chile, Mexico, Paraguary, Peru, and Urugray. The text of the Treaty is included as an annex to the report.

LEMON SOLE:

"The Relation of Stock Density to 'Milkinese' of Lemon Sole in Union Bay, B. C.," by C. R. Forrester, article, Progress Reports of the Pacific Coast Stations, no. 105, February 1956, p. 11, printed. Fisheries Research Board of Canada, Pacific Fisheries Experimental Station, 898 Richards St., Vancouver, B. C., Canada.

MARINE ALGAE:

"New Records of Marine Algae from Pacific Mexico and Central America," by E. Yale Dawson, article, Pacific Naturalist, vol. 1, no. 20, June 6, 1960, pp. 31-52, illus., printed. Beaudette Foundation for Biological Research, Box 482, R.F.D. 1, Solvang, Calif.

"Potential Productivity of the Sea," by John H. Ryther, article, Science, vol. 130, September 11, 1959, pp. 602-608, printed. American Association for the Advancement of Science, 1515 Massachusetts Ave., N. W., Washington 5, D. C.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

MARINE PLANTS:

"New Records of Sublittoral Marine Plants from Pacific Baja California," by E. Yale Dawson, Michael Neushul, and Robert D. Wildman, article, Pacific Naturalist, vol. 1, no. 19, June 6, 1960, pp. 3-30, illus., printed. Beaudette Foundation for Biological Research, Box 482, R.F.D. 1, Solvang, Calif.

MARKETING:

Economic Inquiry into Food Marketing. Part 1--Concentration and Integration in Retailing, 354 pp., printed, $1.25. Federal Trade Commission, Washington, D. C., January 1960. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.). A staff report on economic concentration and integration in the retail sale of food, which completes the first phase of the Commission's economic study of food marketing. The report emphasizes the growing influence of the corporate chains and the decline of the independent grocer. It concludes, however, that retailer-owned cooperatives and wholesaler-sponsored "voluntary groups" of retailers "have shown a capacity for effective competition with the corporate chains." Almost 70,000 food retailers were members of either cooperatives or voluntary groups in 1958, and their combined share of total national food sales was estimated at about 33 percent, compared with 38 percent for corporate chains. The chains increased their share of total food sales in 15 metropolitan areas from 29 percent in 1948 to 44 percent in 1958. Retailer-owned cooperative member stores increased their share from 8 to 19 percent; the voluntary group stores from 5 to 12 percent; but the unaffiliated retailers dropped from 58 to 25 percent during this period. The report also deals with other important changes which have occured in food retailing and distribution. These changes include (1) a higher degree of processing by food manufactures, which has materially lightened the homemaker's job; (2) improvements in transportation, handling, food preserving, and distribution methods generally; (3) a continuing shift from separate meat, produce, and grocery stores to one-stop food stores; (4) replacement of smaller stores by supermarkets, expansion in size, equipment, and number of items carried by supermarkets, and location of supermarkets in new shopping centers; and (5) the spread of self-service throughout food retailing. Included are a number of statistical tables showing various aspects of retail store operation.

NAVIGATION:

United States Coast Pilot 4--Atlantic Coast, Cape Henry to Key West, Sixth (1959) Edition, 181 pp., printed, $2.50. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., 1960. This edition contains chart, diagrams, describing charts available for various areas; general information; and Federal navigation regulations of most importance to these areas. Also included are chapters describing the geographical features, aids to navigation, and other information pertaining to the coast from Cape Henry to Key West; the charts pertaining to eight areas in this region; and features and facilities of the Atlantic Intracoastal Waterway.

NUTRITION:

"The Effect on Human Serum-Lipids of a Dietary Fat Highly Unsaturated But Poor in Essential Fatty Acids," by E. H. Ahrens, Jr., and others, article, The Lancet, January 17, 1958, pp. 115-119, printed. The Lancet, 7 Adams St., Adelphi, London W.C. 2, England

"Nahriverttabelle fur Fische und Fischwaren" (Table of Nutritive Values of Fish and Fisheries Products), article, Allgemeine Fischwirtschaftszeitung, no. 10, March 7, 1959, p. 12, printed in German. Verlag Carl Th. Gorg, Postfach 269, Bremerhaven-F, W. Germany.

"Studies on the Distribution of Lipides in Hypercholesteremic Rats. 1--The Effect of Feeding Palmitate, Oleate, Linoleate, Linolenate, Menhaden and Tuna Oils," by James J. Peifer and others, article, Archives of Biochemistry and Biophysics, vol. 86, February 1960, pp. 302-308, printed. Archives of Biochemistry and Biophysics, Academic Press, Inc., 125 East 23rd St., New York 10, N. Y.

OCEANOGRAPHY:

"El Congreso Internacional de Oceanografia" (The International Oceanographic Congress), article, El Agricultor Venezolano, vol. 23, no. 216, January-February 1960, pp. 18-19, illus., printed. Ministerio de Agricultura y Cria, Caracas, Venezuela.

Frontiers of the Sea: The Story of Oceanographic Exploration, by Robert C. Cowen, 307 pp., illus., printed, $4.95. Doubleday & Co., 575 Madison Ave., New York 22, N. Y., 1960. About past, present, and future of oceans and oceanographic research.

A Plastic Envelope Substitute for Drift Bottles, by F. C. W. Olson, contribution no 44, 4 pp., printed. (Reprinted from Sears Foundation Journal of Marine Research, vol. 10, no. 2, 1951, pp. 190-193.) Oceanographic Institute, Florida State University, Gainesville, Fla.

OVERFISHING:

"La Huitieme Session Pleniere de la Commission Permanente de l'Overfishing" (The Eighth Complete Session of the Permanent Commission on Overfishing), article, La Peche Maritime, vol. 39, no. 987, June 1960, pp. 337-338, printed in French. La Peche Maritime, 190 Blvd. Haussmann, Paris, France.

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OYSTERS:

"An Evaluation of the Indole and Trimethylamine Tests for Oyster Quality," by Donald Lartigue, Arthur F. Novak and Ernest A. Fieger, article, Food Technology, vol. 22, February 1960, pp. 109-112, printed. Institute of Food Technologists, The Garrard Press, 510 North Hickory, Champaign, Ill.

On Oysters and Sulfite Waste Liquor, by Gordon Gunter and Jack McKee, 99 pp., illus., processed. Pollution Control Commission, 224 Old Capitol Bldg., Olympia, Wash., February 25, 1960. The purpose of this report is to recommend a course of action and appropriate water quality standards to protect oysters from any probable adverse and unreasonable effects of sulfite waste liquor in the estuarial environment. It covers the two principal species of oysters commercially important in the State of Washington, viz. Ostrea lurida, the Olympia oyster, and Crassostrea gigas, the Japanese or Pacific oyster. Other oysters, such as the varieties found on the East and Gulf Coast are covered by reference only. The report also embraces ecological factors that may influence oyster productivity and quality, with special attention to the microorganisms believed to constitute the principal food of oysters. The impacts of natural forces, as well as man-made influences are considered in relation to oyster culture. Toxicity data, both acute and long-term, are evaluated with respect to oysters and other organisms. The nature of sulfite waste liquors is described and their occurrence in the tidal estuaries of Washington is analyzed. Finally, historical background and trends in oyster production are reviewed.

PACIFIC ISLANDS:

Trust Territory of the Pacific Islands--12th Annual Report, July 1, 1958-June 30, 1959, Department of State Publication 6945, 272 pp., printed, $1.00. Department of State, Washington 25, D.C., April 1960. (For sale by Superintendant of Documents, U. S. Government Printing Office, Washington 25, D. C.) Includes a chapter on fisheries.

PERU:

Estadistica Economica de la Industria Pesquera (Economic Statistics of the Fishing Industry), 161 pp., printed in Spanish. Ministerio de Agricultura, Direccion de Pesqueria y Caza, Lima, Peru, 1959.

PLAICE:

"Jellied Condition in the American Plaice Hippoglossoides platessoides (Fabricius)," by Wilfred Templeman and Gertrude L. Andrews, article, Journal of the Fisheries Research Board of Canada, vol. 13, March 1956, pp. 149-182, printed. Queen's Printer & Controller of Stationery, Ottawa, Canada.

POLLUTION:

Pulp Mill Pollution in British Columbia, by Michael Waldichuk, Circular No. 57, 18 pp., illus., processed. Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, June 1960.

PORTUGAL:

Gremio dos Armadores de Navios da Pesca do Bacalhau, Relatorio e Contas do Exercicio de 1959 e Orcamento para 1960 (Cod Fishing Vessel Owners' Guild, Statment of Operations for 1959 and Budget for 1960), 32 pp., printed in Portuguese. Comissao Revisora de Contas, Lisbon, Portugal, February 17, 1960.

Gremio dos Armadores da Pesca de Arrasto, Relatorio e Contas do Exercicio de 1959 e Orcamento para 1960 (Trawler Owners' Guild, Statement of Operations for 1959 and Budget for 1960), 52 pp., printed in Portuguese. Comissao Revisora de Contas, Lisbon, Portugal, March 7, 1960.

Gremio dos Armadores da Pesca da Baleia, Relatorio e Contas do Exercicio de 1959 e Orcamento para 1960 (Whaling Vessel Owners' Guild, Report of Operations in 1959 and Budget for 1960), 35 pp., illus., printed in Portuguese. Comissao Revisora de Contas, Lisbon, Portugal, February 15, 1960.

POULTRY NUTRITION:

"A Bioassay for Determining the Nutritional adequacy of Protein Supplements for Chick Growth," by Scott W. Hinner and H. M. Scott, article, Poultry Science, vol. 39, January 1960 pp. 176-183, printed. Poultry Science Publishers, Kansas State College, Manhattan, Kans.

"Interrelationships Among Dietary Energy, Protein, and Amino Acids for Chickens," by K. C. Leong and others, article, Poultry Science, vol. 38, November 1959, pp. 1267-1285, printed. Poultry Science Publishers, Kansas State College, Manhattan, Kans.

PRESERVATION:

"Preservation of Shrimps," by R. T. Roskam, Conserva, vol. 6, no. 11, May 1958, p. 278, parts 1 and 2, printed in Dutch. Conserva, Maanbald voor de Voedlings-en Genotmiddelen-Industrie, Moormans Periodiek, Pers N. V., The Hague, Netherlands.

PROTEINS:

"Biological Value of Herring-Meal Protein. Urinary Nitrogen Excretion in Relation to Protein Content of Diet and Food Intake," by L. R. Njaa. Norwegian Fisheries Research Inst., Bergen, Norway.

"Studies on the Muscle Proteins of the Squid," by Juichiro J. Matsumoto, article, Bulletin of the

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Tokai Regional Fisheries Research Laboratory, no. 23, February 1960, pp. 51-63, printed. Tokai Regional Fisheries Research Laboratory, Tsukishima, Chuo-ku, Tokyo, Japan.

"Studies on Protein Concentrates for Animal Feeding," by J. Bunyan and S. A. Price, article, Journal of the Science of Food and Agriculture, vol. 11, January 1960, pp. 25-37, printed. Journal of the Science of Food and Agriculture, Society of Chemical Industry, 14 Belgrave Square, London, S.W. 1, England.

RESEARCH:

Research in Fisheries--1959, edited by Ted S. Y. Koo, Contribution no. 77, 45 pp., illus., printed. Fisheries Research Institute, College of Fisheries, University of Washington, Seattle 5, Wash., March 1960. Research projects of the Fisheries Research Institute and the teaching faculty of the College of Fisheries are described. The author states that "While the Institute's research is primarily concerned with Pacific salmon in Alaska, the research effort of the College faculty is directed into a multitude of facets--from bacteria to oysters, from fish behavior to radiation biology. Some problems are entirely within the realm of basic research; others have immediate applied value."

RHODE ISLAND:

The Marine Fishes of Rhode Island, by Bernard L. Gordon, 135 pp., illus. with 80 photographs, printed, $4. Book and Tackle Shop, 7 Bay St., Watch Hill, R. I., 1960. To my knowledge this is the first comprehensive list of the 215 salt-water fish species in Rhode Island coastal waters--salt marshes, estuaries salt-water ponds, rocky shoals, and open sea. The black-and-white photographs by the author are excellent and add to the book's attraction and interest. It is the result of a five-year survey of Rhode Island coastal waters. Fishermen, fishery businessmen, vessel owners, researchers, biologists, and many others will be interested and find much valuable information in the book. According to the author, "Rhode Island has more than 400 miles of shoreline, and its waters contain many species of fish." Since colonial times, fish and shellfish have played an important part in the Rhode Island economy. After discussing the history of Rhode Island ichthyology, the author describes the survey made from 1954 to 1959 while he was a student at the University of Rhode Island and biology instructor at Rhode Island College. Also covered by the author are abundance, distribution, seasonal importance, and economic importance of the Rhode Island fish. Three major classes of fish are covered--Agnatha (jawless fishes), Chondrichthyes (cartilaginous fishes), and Osteichthyes (bony fishes). Described are some of the unusual types like barn door skate, cow-nosed ray, mermaids purse, John Dory, snipefish, pipefish, orange filefish, burrfish, etc. but also the more commonly-known such as sharks, herring, shad, smelts, haddock, cod, pollock, hake, flounder, mackerel, etc. One chapter dwells on trends in fish populations. The book has an extensive and up-to-date bibliography as well as an index and map showing the area covered by the author's survey.

--J. Pileggi

ROUGH FISH:

Rough Fish Control, by Nicholas J. Miller, Clifford L. Brynildson, and C. W. Threinen, Publication No. 229, 13 pp., illus., printed. Wisconsin Conservation Department, Madison 1, Wis., 1959. An informative handbook covering the history of and need for rough fish control in Wisconsin, the species included in the definition, their habitats, methods of control, disposition of rough fish after capture, effects of their removal on the fishery, and the future of the rough-fish control program.

SALMON:

Salmon of the Pacific Northwest (Fish vs. Dams), by Anthony Netboy, 135 pp. illus., $3.00. Binfords & Mort, Publishers, 124 N.W. 9th Ave., Portland 9, Ore., 1958. A great North American fishery resource--the salmon--is the subject of this book. A readable and fairly comprehensive discussion of the Pacific Northwest salmon, the fishery, and the problems. This is a book for the commercial fisherman, the businessman interested in the fishing industry, the researcher, the conservationist, the economist, and even the sportsman. Not a big book, but packed with a great deal of useful information. It presents the struggle of the salmon of the Pacific Northwest to live side by side with the inroads of civilization. After successfully living in its natural habitat for thousands of years, there is the danger that civilization will completely destroy the salmon. The author in his preface points out: "In short, one cannot live in the Pacific Northwest very long before becoming aware that salmon, prince of Pacific game fishes, is an exceedingly valuable animal not only to the consumers who enjoy its succulent meat but sport and commercial fishermen and thousands of people who make their living in canneries, gear manufacture, etc." But I feel sure that members of the fishing industry will not agree with the author that, "Now, we can say that the fish are blocking the dams." The author does say: "In writing this book I have endeavored to place the complex issues in focus and in terms the layman can understand, to set down the facts without bias, and to appraise the fish vs. dams problem without prejudice."

Senator Richard L. Neuberger, in his foreward to the book, sums up the question of fish versus dams quite succinctly when he states: "I think the Pacific Northwest needs low-cost power--compellingly so. But I feel this energy should first be obtained at those sites where little or no damage will be done to our fisheries resources."

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The book describes the life history and migrations of the salmon, the Indian fishery, and the commercial fisheries. Then it goes on to discuss the encroachment of civilization, the Federal dams, the Lower Columbia River fishery program, and controversial dams (McNary, Ice Harbor, Cowlitz, Pelton, Middle Snake, Nez Perce). The next to the last chapter asks: "Can the salmon be saved?" In the last chapter the author discusses "Fish--and Power Too." This book provides a quick look at the problem of fish versus dams. It also contains a selected bibliography and an index.

--J. Pileggi

The Atlantic Salmon, by Lee Wulff, 217 pp., illus., printed. A. S. Barnes and Company, Inc., 232 Madison Ave., New York 16, N. Y., 1958. A facinating book about the "paradoxical fish," written by a man obviously bewitched by his subject. With single-hearted devotion, he describes this fish without appetite which can still be lured by a fly; past and present salmon fishing methods; the behavior of salmon during the spawning season; types of tackle, types of wet and dry flies; where to fish for salmon; casting; where to go for salmon; and miscellaneous notes on salmon fishing. The many excellent photos, both black-and-white and in color, add to the interest of this book for both commercial and sports fishermen.

"British Columbia Salmon Reports," article, Trade News, vol. 12, no. 10, April 1960, pp. 3-4, illus., printed. Department of Fisheries of Canada, Ottawa, Canada. Discusses two recent reports released by the Canadian Department of Fisheries in the Pacific Area. These deal with the 1959 salmon catch and spawning encampment and the significance of the sharply increasing catch of salmon by sport fishermen. For the past seven years the Department has compiled estimates of the catch of salmon by sport fishermen in tidal waters of British Columbia. During this period the anglers' catches have grown steadily larger. Spawning escapements were good for chum, coho, and spring salmon during 1959.

"Two Haemoglobins in Chum Salmon," by K. Hashimoto and F. Matsuura, article, Nature, vol. 184, October 31, 1959, p. 1418, printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

SARDINES:

"Aspects Biologiques et Biométriques de la Sardine (Sardina pilchardus Walb.) des Environs de Lisbonne, Pendant Les Années, 1952-1957" (Biological and Biometric Aspects of the Sardine (Sardina pilchardus Walb.) in the Lisbon Area, 1952-1957), by Jaime Dos Santos Pinto and Ivone Ferreira Barraca, article, Notas e Estudos do Instituto de Biologia Maritima; no. 19, September 1958, 97 pp., illus., printed in French. Instituto de Biologia Maritima, Cais do Sodré, Lisboa, Portugal.

"Biochemical Studies on the Fat of the Sardine Body. I--Seasonal Variation in the Fat, Unsaponifiable Matter, and Cholesterol Contents of Several Tissues of the Sardine Body," by Masahuto Wada, article, Nippon Nogei-Kagaku Kaishi, vol. 29, 1955, pp. 339-342, printed. Agricultural Chemical Society, Faculty of Agriculture, University of Tokyo, Bunkyo-ku, Tokyo, Japan.

"Experimental Study on Frozen Sardines," by M. Boury, article, Revue Generale de Froid, vol. 35, September 1958, pp. 845-849, printed in French. Revue Generale de Froid, Association Francaise du Froid, 29 Boulevard Saint Germain, Paris France.

"Regards sur Notre Production Sardiniere" (Regarding Our Sardine Production), by L. Plouas; "A Quiberon, Premier Port Sardinier Francais se Pose le Probleme de l'Equipement" (At Quiberon, the Leading French Sardine Port, There is an Equipment Problem; and "Perspectives Actuelles de la Peche a la Sardine en Espagne" (Actual Expectations for the Sardine Fishery in Spain, by V. Paz-Andrade, article, La Peche Maritime, vol. 39, no. 987, June 1960, pp. 338-343, illus., printed in French. La Peche Maritime, 190 Blvd. Haussmann, Paris 8, France.

SCHOOL LUNCH PROGRAM:

The Market for Food in Public Schools, by Kenneth E. Anderson and William S. Hoofnagle, Marketing Research Report No. 377, 62 pp., printed, 40 cents. U. S. Department of Agriculture, Agricultural Marketing Service, Marketing Research Division, Washington D. C., January 1960. (For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This study was undertaken as part of a broad program of research to expand markets for farm products. Results of the study indicated that the school market is primarily a local one; and that the role of Government is relatively small in supplying most commodities to the school outlet. About $505 million or 85 percent of the total value of food used in schools was acquired through commercial channels in nearby markets. Findings showed that during the period July 1957 through June 1958, the total wholesale value of food, both purchased and donated, delivered to approximately 60,000 public schools having a food service, amounted to $597 million or $28 per capita based on an average daily attendance of slightly over 21 million pupils. Meat, poultry, and fish which moved into the school outlet during this period, had a value of almost $108 million or $5 per capita. Of this amount, $12.8 million was the value

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of fish and shellfish consumed, accounting for 2.1 percent of the total value of food. There were 28 million pounds of fish delivered to the school lunch outlet during the period under study. The quantity of fresh and frozen fish utilized in public schools was only slightly larger than that of canned fish items. Tuna was by far the most important canned fish item, accounting for almost 8 million pounds, followed by salmon which represented slightly over 4 million pounds. Extensive and detailed statistical tables showing results of the survey are included.

SEAWEED:
Annual Report for 1959, 20 pp., printed. Institute of Seaweed Research, Inveresk, Midlothian, Scotland. Discusses development in the Scottish and foreign seaweed byproducts industry during 1959, the development of pharmaceutical products from seaweed, work of the Instutute, its technical assistance services, sponsorship of seaweed research by other organizations, and a list of publications on seaweed.

"Seaweed for Food--South Wales Laverbread Industry," article, Food Manufacture, vol. 34, November 1, 1959, pp. 443-444, printed. Food Manufacture, Leonard Hill, Ltd., Stratford House, 9, Eden St., London N.W. 1, England.

SHARKS:
"The Nurse Shark and the Nurse Shark Fishery," by Levy Carlson, article, Fiskeridirekt. Skrifter Ser. Fisk., vol. 4, no. 1, 1958, pp. 1-35, printed in Norwegian. Fiskeridirekt. Skrifter Ser. Fisk., Director of Fisheries, Bergen, Norway.

"La Pesca del Tiburon en Cuba" (The Shark Fishery in Cuba), by Armando Perez Gattini, article, Mar y Pesca, vol. 3, nos. 7 and 8, April-May 1960, pp. 31, 36, illus., printed in Spanish. Mar y Pesca, Edificio I.N.R.A., Noveno Piso, Plaza Civica, Havana, Cuba.

SMELT:
"Smelt Fishing in Wisconsin, by Donald Euers, article, Wisconsin Conservation Bulletin, vol. 25, no. 4, April 1960, pp. 24-27, illus., printed. Wisconsin Conservation Dept., Box 450, Madison 1, Wis. Describes the abundant harvests of smelt in Lakes Michigan and Superior, particularly during the spring. Smelt may be landed legally by dip nets or seines and residents of Wisconsin are permitted to market them commercially.

SMOKING:
"A New Smoke Producer Makes Its Bow," article, Seafood Merchandising, vol. 19, no. 1, January 1959, p. 27, printed. Seafood Merchandising, 624 Gravier St., New Orleans 12, La.

SOUTH AFRICA:
The South African Pilchard (SARDINOPS OCELLATA) and Maasbanker (TRACHURUS TRACHURUS)--The Chaetognatha off the West Coast of the Union of South Africa, July 1954-June 1955, by A. E. F. Heydorn, Investigational Report No. 36, 55 pp., illus., printed. (Reprinted from "Commerce & Industry," February 1959.) Division of Fisheries, Beach Road, Sea Point, Cape Town, Union of South Africa, 1959.

SPAIN:
Maquinaria para Conservas de Pescado Aparecida Ultimamente en Espana (Fish Canning Machinery Recently Introduced in Spain), by F. Lopez Capont, 9 pp., illus., printed in Spanish. (Reprinted from Informacion Conservera, vol. 7, no. 66, June 1959, pp. 4-12.) Informacion Conservera, Colon, no. 62, Valencia, Spain.

"La Produccion Conservera Espanola en 1958" (Sapnish Canning Production in 1958), article Boletin de Informacion del Sindicato Nacional de la Pesca, no. 17, February 1960, pp. 11-13, printed in Spanish. Sindicato Nacional de la pesca, Paseo del Prado, 18-20, 6ª Planta, Madrid, Spain.

SPOILAGE:
"Bacteria Concerned in the Spoilage of Haddock: Preliminary Paper," by A. H. Gee, article, Contributions to Canadian Biology and Fisheries (new series) vol. 3, no. 14, 1927, pp. 347-364, printed. Fisheries Research Board of Canada, Ottawa, Canada.

"Studies of Fish Spoilage. II--The Origin of Trimethylamine Produced During the Spoilage of Cod Muscle Press Juice," by S. A. Beatty, article, Journal of the Fisheries Research Board of Canada, vol. 4, no. 2, May-July 1938, pp. 63-68, printed. Fisheries Research Board of Canada, Ottawa, Canada.

"Studies of Fish Spoilage, VIII--Volatile Acid of Cod Muscle Press Juice," by V. K. Collins, article, Journal of the Fisheries Research Board of Canada, vol. 5, no. 3, July 1941, pp. 197-202, printed. Fisheries Research Board of Canada, Ottawa, Canada.

STANDARDS:
Microscopic-Analytical Methods in Food and Drug Control, Food and Drug Technical Bulletin No. 1, 255 pp., illus., printed, $2. U. S. Food and Drug Administration, Washington 25, D. C., May 1960. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Discusses the latest methods for microscopic identification of contaminants in foods and drugs and is designed to help analysts trace adulterants to their sources. Covers product control and sanitation; sources and types of contamination; isolation and detection of contamination; microscopes, photomicrography, and exhibits; fungi associated with food decomposition; and entomology in food and drug analysis. Also covers parasites and related forms; rodent and other animal filth in foods

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and drugs; applied histology of food and drug materials; crystallography and chemical microcopy; and identification of drug tablets and capsules. This bulletin will be particularly helpful to the control departments of food processing plants. It replaces and enlarges the earlier Microanalysis of Food and Drug Products, first published in 1944 as Food and Drug Circular No. 1. It was prepared by the Administration's Division of Microbiology to show the scope of microscopic-analytical work, the approach used, and the application of such techniques to industry and regulatory problems.

STATISTICS:

Report on the Expert Meeting on Fishery Statistics in the North Atlantic Area (Edinburgh, Scotland, September 22-30, 1959), 68 pp., processed. Food and Agriculture Organization of the United Nations Viale delle Terme di Caracalla, Rome, Italy, February 4, 1960. Includes proceedings, papers presented, and discussions held under three of the agenda items covered during the meeting of experts in fishery statistics. The items included fishery statistics requirements, dificulties in meeting high priority requirements and their solution, and further improvement in fishery statistics. Topics discussed at the meeting included definitions and classifications of statistical items; simplification of statistical reporting to international organizations; conversion factors and allied topics; statistics on fish discarded at sea; statistical treatment of direct foreign landings; subsistence and sports fisheries; statistics of fishing effort; statistics on disposition, processing, distribution, and consumption; and price and value statistics. Recommendations included the establishment of a continuous Working Party on Fishery Statistics in the North Atlantic Area. Annexes contain the texts of papers presented and other pertinent information.

STORAGE:

"Keeping Quality of Pacific Coast Dogfish," by R. H. Moyer and others, article, Journal of the Fisheries Research Board of Canada, vol. 16, December 1959, pp. 791-794, printed. Fisheries Research Board of Canada, Ottawa, Canada.

SURINAM:

"Hoe Vissen We Met Een Bank-Net" (How do We Fish with a Bank-Net?) by F. F. van Dijk, article, Landbouwnieuws, vol. 12, no. 3, March 1960, p. 36, illus., printed in Dutch. Department L.V.V., Paramaribo, Surinam.

TERRITORIAL WATERS:

"La Deuxieme Conference sur le Droit de la Mer" (The Second Conference on the Law of the Sea), by Robert Lenier, article, France Pêche, vol. 5, no. 39, April 1960, p. 13, printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

"La Question des Eaux Territoriales et Ses Consèquences" (The Question of Territorial Waters and Its Consequences), by Jules Molard, article, France Pêche, vol. 5, no. 38, March 1960, pp. 13-14, printed in French. France Pêche, Tour Sud-Est, Rue de Guemene, Lorient, France.

TEXAS:

Population Studies of the Shallow Water Fishes of an Outer Beach in South Texas, by Gordon Gunter, 8 pp., illus., printed. (Reprinted from Institute of Marine Science, vol. 5, December 1958.) Gulf Coast Research Laboratory, Ocean Springs, Miss.

TIDES:

Tide Tables--East Coast, North and South America (including Greenland), 1961, 279 pp., printed, $1. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1960. This handbook contains tables on daily tide predictions for 46 reference stations and differences for about 1,600 stations in North and South America, approximate height of tide at any time, local mean time of sunrise and sunset, reduction of local mean time to standard time, moonrise and moonset for eight places, and astronomical data. Explanatory notes to facilitate usage of each table are included. Also contains a list of Coast and Geodetic Survey publications relating to tides and tidal currents.

Tide Tables--West Coast, North and South America (including the Hawaiian Islands), 1961, 223 pp., printed, $1. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., November 1959. This handbook contains tables on daily tide predictions for 38 reference ports, tidal differences and other constants for about 1,000 stations, approximate height of tide at any time, local mean time of sunrise and sunset, reduction of local mean time to standard time, moonrise and moonset, and astronomical data. Explanatory notes to facilitate usage of each table are included. Also, contains a list of Coast and Geodetic Survey publications relating to tides and tidal currents.

TRANSPORTATION:

A Survey of Fish Transportation Methods and Equipment, by Kenneth S. Norris and others, Contribution no. 5, 31 pp., illus., printed. (Reprinted from California Fish and Game, vol. 46, no. 1, January 1960, pp. 6-33). California Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif. Because of the need for large-scale propagation and planting of fish in streams and rivers, the transport of live fish is becoming an increasingly important problem. This article reviews available information on present live-fish transportation practices. Ninety-six state, Federal Government, and private agencies, and individuals have been polled for

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transport data. This review has been limited primarily to principles and methods. Construction methods are not reviewed in detail, except where they have a direct bearing upon the welfare of the fish being transported. Discussions are included on tank construction and materials, use of drugs in the transportation of fish, osmotic problems, loads and distances, pretreatment of fish, and history of live-fish transportation.

TRANSPORTING FISH:
"From Milk Cans to Plastic Bags," by Ludwig Frankenberger, article, Wisconsin Conservation Bulletin, vol. 25, no. 4, April 1960, pp. 17-19, illus., printed. Wisconsin Conservation Dept., Box 450, Madison 1, Wis. Discusses new methods of transporting fish from hatcheries to lakes and streams. The handy plastic bags and cardboard boxes are economical for moving fry and fingerlings; when larger fish are transported, tank trucks are most satisfactory.

TRAWLERS:
"Construction of Aluminum Fish Rooms: Stanchions, Pound Boards and Light Alloy Fittings," article, The Shipping World and World Shipbuilding, vol. 140, no. 3436, May 1959, pp. 449-450, printed. The Shipping World and World Shipbuilding, 1 Arundel St., London W.C. 2, England.

"The Universal Star--Her Practicability Demonstrated," article, World Fishing, vol. 9, no. 6, June 1960, pp. 26-29, illus., printed. World Fishing, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London, N.W. 1, England. Describes the construction and operation of a new 104-foot experimental stern trawler, powered by Diesel ingines and equipped with hydraulic gear. Details of the technique employed in the "Unigan" system of Trawling and the reasons for this revolutionary type of design are included.

TRAWLING:
"Prediction of Selection Factors in a Tropical Trawl Fishery," by Alan R. Longhurst, article, Nature, vol. 184, p. 1170, printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y. October 10, 1959,

TROPICAL FISH:
All about Tropical Fish, by Derek McInerny and Geoffrey Gerard, 480 pp., illus., printed. The Macmillan Company, 60 Fifth Ave., New York 11, N. Y., 1958.

TROUT:
"Keeping Rainbows in Cold Storage," by Richard W. Nelson, article, U.S. Trout News, vol. 4, November-December 1959, pp. 11-12, printed. U.S. Trout News, Sport Fishery Institute, Bond Bldg., Washington, D. C.

TUNA:
"La Cloture de la Campagne a Dakar" (The Closing of the Tuna Season at Dakar), article, La Peche Maritime, vol. 39, no. 986, May 1960, p. 276, printed in French. La Peche Maritime, 190 Haussman Blvd., Paris, France.

"A Concarneau, les Pecheurs et Conserveurs Font le Point" (At Concarneau, the Tuna Fishermen and Canners give their Status), article, La Peche Maritime, vol. 39, no. 986, May 1960, pp. 271-272, printed in French. La Peche Maritime, 190 Blvd. Haussman, Paris, France.

"Aux Etats-Unis, la Conversion des Thoniers-Clippers en Senneurs S'Etend" (In the United States, Conversion of Tuna Clippers to Purse-Seiners Expands), article, La Peche Maritime, vol. 39, no. 986, May 1960, pp. 293-295, illus., printed. La Peche Maritime, 190 Haussman Blvd., Paris, France.

"Les Pecheurs Luziens Dressent le Bilan de la Campagne 1959-1960" (The Luzien Fishermen Review the 1959-1960 Tuna Season), article, La Peche Maritime, vol. 39, no. 986, May 1960, p. 270, printed in French. La Peche Maritime, 190 Blvd. Haussman, Paris, France.

"Le Programme du Senegal en Matiere d'Armement Thonier" (The Program of Senegal Regarding Tuna Vessels and Gear, article, La Peche Maritime, vol. 39, no. 986, May 1960, pp. 273-275, illus., printed in French. La Peche Maritime, 190 Blvd. Haussman, Paris, France.

"Quelques Personnalites Nous Parlent de la Peche au Thon en Afrique Occidentale" (Several People Tell Us About the Tuna Fishery in West Africa), article, La Peche Maritime, vol. 39, no. 986, May 1960, pp. 269-270, printed in French. La Pache Maritime, Blvd. Haussman, Paris, France.

"Treatment and Use of Albacore Caught off French Western Africa Coasts," by J. R. Crepey, article, Bulletin de L'Institut International du Froid, vol. 39, 1959, pp. 1524, 1526, printed. Institute of Refrigeration, 177 Blvd. Malesherbes, Paris 17, France.

TURKEY:
"Balikcilik Kooperatiflerimizin Kredi Finansmani ve Organizasyon" (Financing and Organization of Our Fishing Cooperatives), by Suleyman Arisoy, article, Karinca, Kooperatif Postasi, vol. 25, no. 269, May 1959, pp. 7-9, printed in Turkish. Turk Kooperatifcilik Kurumu, Mithat Pasa Cad. 36, Ankara, Turkey.

"T. C. Ziraat Bankasinin Balikcilik Kooperatiflerine Kredi Tatbikati" (Credit Applications of

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

the Turkish Fishing Cooperatives of Agricultural Bank of the Turkish Republic), by Suleyman Arisoy, article, T. C. Ziraat Bankasinin Haber ve Fikir Dergisi, vol. 5, no. 2, March 1959, pp. 14-16, printed in Turkish. T. C. Ziraat Bankasi Matbaasi, Ankara, Turkey.

"Turkiye Su Mahsullerinin Kredilendirilmesi" (Turkish Water Products), by Suleyman Arisoy, article, Karinca, Kooperatif Postasi, vol. 22, no. 224, August 1959, pp. 22-24, printed in Turkish. Turk Kooperatifcilik Kurumu, Mithat Pasa Cad. 36, Ankara, Turkey.

"Turkiyedeki Balikci Kooperatifleri" (Fishing Cooperatives in Turkey), by Suleyman Arisoy, article, Deniz, vol. 5, no. 59, February 1960, pp. 22-23, printed in Turkish. Yuksek Denizcilik Okulu Mezunlari Cemiyeti, Ankara, Turkey.

"Turkiye Balikcilik Kooperatifleri Hukukuna Bakis" (A Brief Look at the Law of Fishing Cooperatives), by Suleyman Arisoy, article, Turkiye Cumhuriyeti Ziraat Bankasi, Kooperatifler Teftis Dergisi, vol. 1, no. 2, March 1959, pp. 6-10, printed in Turkish. T. C. Ziraat Bankasi, Genel Mudurluk, Musavir Mudur Muavini, Ankara, Turkey.

--Listings under Turkey supplied by Suleyman Arisoy, Fisheries Advisor Agricultural Bank of the Turkish Republic, Ankara, Turkey.

UNION OF SOUTH AFRICA:

Fisheries Development Corporation of South Africa--Fifteenth Annual Report (Covering Period 1st October, 1958 to 30th September 1959), 16 pp., printed in English and Dutch. Fisheries Development Corporation of South Africa, Ltd., Sea-fare House, 68 Orange St., Cape Town, Union of South Africa. Presents brief reports on the state of the fisheries industry; pilchard-maasbanker research program and general activities of the Corporation.

UNITED KINGDOM:

"The Torry Research Station, Aberdeen," by G. H. O. Burgess, article, Nature, vol. 184, September 19, 1959, pp. 863-865, printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

White Fish Authority, Ninth Annual Report and Accounts for the Year Ended 31st March, 1960, 52 pp., printed, 3s. (about 42 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London W.C. 2, England. Covers the activities and functions of the White Fish Authority for the fiscal year ending March 31, 1960, its income, expenditures, and fishery loans. Also includes sections on production of fishery products, marketing and distribution, research and experiments, training courses, and investigations.

U.S.S.R.

Poliarnyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khoziaistva i Okeanologii, Trudy, no. 10, 1957, printed in Russian. Poliarnyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khoziaistva i Okeanologii, Trudy, Murmansk, U.S.S.R. Contains, among others, these articles: "Prognosis of Fish Stocks and Trawling Conditions," by N. A. Maslov; "Improving the Method Used in Long Range Forecasts of the State of Cod and Haddock Stocks," by N. A. Maslov; "Quantitative Relation Between Year Classes of Cod and Haddock in the Barents Sea Based on Numerical Estimates of Young Fish and Fishery Data," by A. S. Baranenkova; "Results of Tagging Fishes in the Barents Sea during 1946-1955," by K. G. Konstantinov; "Annual Variations in the Feeding of Cod in the Barents Sea," by N. S. Grinkevich; "Distribution and Growth of Larvae and the Young of Coalfish (Pollachius Virens (L.)," by A. S. Baranenkova; "Rosefish Fisheries in the Southern Part of the Barents Sea and the Kopytov Area," by V. I. Travin; "Sex and Age Groups of the Rosefish Sebastes mentella Travin in the Kopytov Area," by E. I. Surkova; and "Chart of Fishing Grounds of the Barents Sea."

Rybnoe Khoziaistvo, vol. 35, no. 7, 1959, printed in Russian. Rybnoe Khoziaistvo, Kotel 'nicheskaia Naberezhiaia D 1/15, Souizpechati Otdelu "Zhurnal-Pochtoi," Moscow Zh-240, U.S.S.R. Includes, among others, these articles; "Improve the Quality and Assortment of Fishery Products;" "Scientific Expeditions of the Submarine Boat Severianka," by V. P. Zaitsev and V. G. Azhazha; "First Experiment in Observing the Behavior of Herring from a Submarine Boat," by D. V. Radakov and B. S. Solov'ev; "Types of Pond Carp Culture with Reference to Its Prospective Development," by K. A. Sadlaev; "Prospective Tuna Fisheries off the Western Coast of Africa," by V. K. Korotkov; "Measures for Increasing the Effectiveness of a Trawler Fleet," by I. R. Matrosov; "Catching Sprats with Fish Pumps Under Conditions of Underwater Lighting and the Use of Impulse Current," by I. V. Nikonorov and A. Kh. Pateev; "Results of Electric Fishing in Rybinsk Reservoir," by V. A. Shentiakov and V. A. Strakhov; "Development of the Fishing Industry in Latvia," by M. A. Kozokov; and "Third Session of the Soviet-Japanese Fishery Commission," by P. A. Moiseev.

Rybovodstvo i Rybolovstvo, vol. 2, no. 4, 1959, printed in Russian. Rybovodstvo i Rybolovstvo, Ministerstvo Sel'skogo Khoziaistva SSR, Moscow, U.S.S.R. Includes, among others, these articles: "Utilizing the Lesser Rivers of the Ukraine for Commercial Fishing," by V. Movchan; "Marketable Carp on the Fish Spawning and Rearing Farm," by G. Zhukovskii, and "Fish Catching and Sorting Device," by T. Kondrat'ev.

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VENEZUELA:

"La Pesca de Arrastre, Esperanza de Venezuela" (The Trawl Fishery, Venezuela's Hope), by C. R. Chavez, article, El Agricultor Venezolano, vol. 23, no. 216, January-February 1960, pp. 29-31, illus., printed. Ministerio de Agricultura y Cria, Caracas, Venezuela.

VESSELS:

Atlantic Merchant Vessel Report System (SMVER) 4 pp., illus., printed. United States Coast Guard, Treasury Department, Washington 25, D. C., revised January 1960. The Atlantic Merchant Vessel Report System was established to improve search and rescue coordination efforts at sea.

Fishing Boats of the World: 2, edited by Jan-Olov Traung, 831 pp., illus., printed in English with French and Spanish summaries, £7 7s. (about US$20.65). Fishing News (Books) Ltd., Ludgate House, 110 Fleet St., London, E.C. 4, England, 1960. A report which will be highly valuable to world fishing interests, based on papers and discussions at the Second FAO World Fishing Boat Congress held at Rome, April 1959. Includes also a contribution on purse seining, information on stern trawling with designs of recent applications, and other supplementary contributions from fishery experts. Contains, in its 170 contributions, 800 illustrations, and 200 tables, the most up-to-date, valid information available on fishing boat design and operation. The book is divided into four major parts; Part I--tactics, deals with the use of varying fishing methods, deck arrangements and other features for different types of boats; Part II--deals with materials, new and old assessments, fish holds, installation of machinery, and costs; Part III--covers sea behavior and gives model tests and actual experiences--is particularly valuable to the naval architect, owner, and skipper; and Part IV--productivity, gives a symposium on types of boats suitable for various classes of fishing. This book is highly technical, but at the same time intensely practical in its aim of improving the worldwide standard of fishing boat design and thus contributing to larger and more economical catches. The function of the FAO is to increase the world's food supply; some success is being achieved in fishery products. Since 1953, when the first Congress was held, the world catch has grown from 25 to 33 million tons in 1958. Scientists believe it can be raised to 60 million tons without detriment to stocks. For Fishery administrators, technicians, naval architects, boat builders, and fishing craft operators, this book will prove invaluable not only for its basic knowledge but for the inspiration it gives for the future development.

VITAMINS:

"The Constituents of Cod Liver with Vitamin B_{12} Activity for Lactobacillus Leichmannii," by Beryl Truscott and P. L. Hoogland, article, Canadian Journal of Biochemistry and Physiology, vol. 34, 1956, pp. 191-196, printed. Canadian Journal of Biochemistry and Physiology, Division of Administration, The National Research Council, Sussex St., Ottawa, Canada.

"Biochemical Studies on the Vitamin A in Fish Viscera. III--The oxidation of Vitamin A in Fish Liver Oils," by Toyoki Ono and Fumio Nagayama, article, Journal of the Tokyo University of Fisheries, vol. 41, 1955, pp. 153-162, printed in Japanese. Tokyo University of Fisheries, Shiba-Kaigandori 6-chome, Minato-ku Tokyo, Japan.

"Marine Edible Fishes. I--Distribution of Oil and Vitamin A in the Skin, Flesh, and Liver of Edible Fishes of Karachi Waters," by A. Hameed Khan and S. Abdul Haq, article Pakistan Journal of Scientific and Industrial Research, vol. 1, 1958, pp. 309-311, printed. Pakistan Council of Scientific and Industrial Research, 3/4/D/VI, Nazimabad, Karachi, Pakistan.

"Studies on the Economical Manufacture of Vitamin A Concentrate from Fish Liver Oil. X--Adsorption by Weakened Acid Clay," by Hideo Higashi and others, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 25, July 1959, pp. 196-203, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokaiku Suisan Kenkyujo, Tsukishima, Koyobashi, Tokyo, Japan.

WALRUS:

Preliminary Investigation of the Atlantic Walrus, by Alan G. Loughrey, Wildlife Management Bulletin, Series 1, No. 14, printed. Department of Northern Affairs and National Resources, Ottawa, Canada.

WHALES:

"Effect of Difference of Initial and Final Temperature of Whalemeat When it is Taken Into and Out of Freezer on Drip," by Kazuo Tanaka and Takeo Tanada, article, Journal of the Tokyo University of Fisheries, vol. 43, no. 1, 1957, pp. 13-17, printed in Japanese. Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Minato-ku, Tokyo, Japan.

"On the Mass Strandings of Sperm Whales," by Raymond M. Gilmore, article, Pacific Naturalist, vol. 1, no. 10, August 6, 1959, pp. 9-16, illus., printed. The Beaudette Foundation for Biological Research, Box 482, R.F.D., Solvang, Calif.

"Whales Without Flukes," by Raymond M. Gilmore, article, Pacific Naturalist, vol. 1, no. 9, August 6, 1959, pp. 3-9, illus., printed. The Beaudette Foundation for Biological Research, Box 482, R.F.D. 1, Solvang, Calif.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

WHALING:

Whaling--Amendments to the Schedule to the International Whaling Convention Signed at Washington on December 2, 1946, Treaties and Other International Act Series 4404, 6 pp., printed, 5 cents. Department of State, Washington 25, D. C., 1960. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents the amendments adopted at the Eleventh Meeting of the International Whaling Commission, London, June 22-July 1, 1959.

YELLOW PERCH:

Evaluation of the Yellow Perch Hatchery Program in Maryland, by R. J. Muncy, Resource Study Report No. 15, 13 pp., illus., printed. Maryland Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md., January 1959.

YUGOSLAVIA:

Stock Breeding and Fisheries 1958, 43 pp., printed in Serbo-Croatian with English abstract. Federal Statistical Institute, Belgrade, Yugoslavia, October 1959. Contains statistical data on stock breeding, veterinary services, and fisheries in Yugoslavia during 1958. The section on fisheries includes information on fishing craft for salt- and fresh-water fisheries; the catch of salt- and fresh-water fish and shellfish by species and by months; and the catch of salt- and fresh-water fish by fishing enterprises and cooperatives and its distribution during 1958. Most of the tables include data for the years 1954-1958.

Morsko Ribarstvo, (Marine Fisheries), printed in Yugoslavian with an English Summary of principal articles, no. 11, November 1959, 24 pp. Morsko Ribarstvo, V. Bagata 3, P. O. B. 185, Rijeka, Yugoslavia. Contains, among others, the following articles: "Fisheries and Shipbuilding," by Ivo Tilic; "Expertimental Tuna Fishing with Clipper," by Dinko Marelic; and "Trawling in the Neretva-Channel," by S. Zupanovic.

_____, no. 12, December 1959, 24 pp. Morsko Ribarstvo, V. Bagata 3, P. O. B. 185, Rijeka, Yugoslavia. Contains among others, the following articles: "The World Scientific Congress of the Biology of the Sardine and Its Relatives," by R. Muzinic; and "On the Occasion of the Article Entitled--New Fishery Experts Study the Fishing of Clupeonella delicatula Caspia on the Caspian Sea," by M. Zei and J. Skrk.

_____, no. 1. January 1960, 26 pp. Morsko Ribarstvo, V. Bagata 3, P. O. B. 185, Rijeka, Yugoslavia. Contains, among others, the following articles: "Relations Between Climatic Changes and Fish Abundance in Adriatic," by A. Obuljen; "Small Blue-Fish Fishing Along Yugoslav Coast," by A. Domancic; and "Quality Control of Fishery Products," by D. Milos.

_____, no. 2, February 1960, 18 pp. Morsko Ribarstvo, V. Bagata 3, P. O. B. 185, Rijeka, Yugoslavia, Contains, among others, the following articles: "The Problem of Professional Cadres in Marine Fisheries," by I. Blagaic; "The Results of the Fertilization of the Lim-Channel in 1959," by M. Buljan; and "Some Details on Biology of Tuna," by D. Morovic.

_____, no. 3, March 1960, 18 pp. Morsko Ribarstvo, V. Bagata 3, P. O. B. 185, Rijeka, Yugoslavia. The major part of this number is dedicated to problems connected with shellfish breeding.

_____, no. 4, April 1960, 22 pp. Morsko Ribarstvo, V. Bagata 3, P. O. B. 185, Rijeka, Yugoslavia. Contains, among others, the following articles: "Advisory Meeting on Problems of the Fisheries Economy," by N. Cuculic; and "Tuna and Its Life," by D. Morovic.

_____, no. 5, May 1960, 24 pp. Morsko Ribarstvo, V. Bagata 3, P. O. B. 185, Rijeka, Yugoslavia. Contains, among others, the following articles: "Minutes from the Yearly assembly of the Professional Association of the Marine Fisheries of Yugoslavia;" "The Five-Year Plan of the Exploration Work in the Advancement of Marine Fisheries," by N. Cuculic; and "A Talk With the Pioneer in Purse-Seines, M. Mezic."

_____, no. 6, June 1960, 20 pp. Morsko Ribarstvo, V. Bagata 3, P. O. B. 185, Rijeka, Yugoslavia. Contains, among others, the following articles: "Working Time and Fishing," by M. Grubelic; "On Fishing Experiments by Submarine Light in Tunisia," by R. Muzinic; and "A Few Observations on the Whiting in the Mid-Adratic," by S. Zupanovic.

--Listings under Yugoslavia supplied by K. Sepic, Engineer.

HOW FAST CAN A FISH SWIM?

At what speeds can cod and herring swim? Experiments on problems of animal locomotion carried out at the Cambridge School of Zoology have produced some interesting information on the speed at which fish swim, and their powers of endurance. Similarly, since 1955 the Marine Laboratory of the Scottish Home Department, Aberdeen, has been conducting experiments from the point of view of interest of the fishing industry.

The Cambridge experiments dealing mainly with small fish, show that a small fish can move in a short burst at a speed equivalent to traveling 10 times its own length in a second although this varies with different species. It appears that with fish up to one foot in length, the top speed of the fish is proportionate to its length. Beyond this length, the top speed increases by a less amount than in direct proportion to length. It is even suggested that the top speed of any fish can be calculated by means of a formula, given only its length and the frequency of its tail movements.

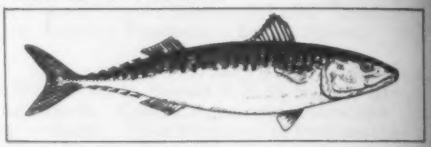
Of far greater interest are the measurements of endurance which have for the first time been made--in other words the number of times its own length that a fish can swim before becoming exhausted when stimulated continuously during its swim. The work at Aberdeen is being done mainly on marine fish, as it was felt that this information would be valuable when designing fishing gear and calculating the best speed for towing trawls.

Due to the difficulty of obtaining live healthy fish of all sizes of a particular species, only a very limited range of sizes has been measured. The most complete information is available for herring.

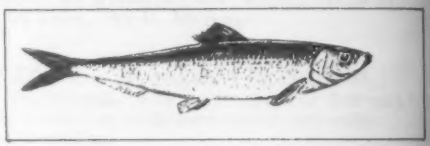
It appears that sea trout, brown trout, and mackerel are the fastest swimmers, with herring, haddock, and whiting next, while cod and saithe are the slowest. No speeds higher than 7-8 m.p.h. have been recorded so far. Although careful check was kept of the temperature, there is no evidence of this affecting the maximum speed to any extent. It is likely, however, to affect the cruising speed.

In order to relate the maximum swimming speed to chance of fish escaping from nets, it is necessary to know how long they can sustain a near maximum speed.

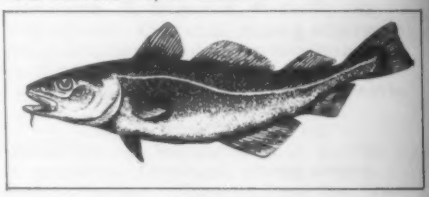
MACKEREL--One of the fastest.



HERRING--In the second group of swimmers.



COD--Slow swimmer, low endurance.



Speed and Endurance of Certain Fish

Fish	Average Length in Inches	Average Distance Swum in Inches	No. Body Lengths Swum Before Becoming Exhausted
Herring. . . .	9	10,000	1,100
Sea trout . .	9	8,700	965
	14	6,600	470
Mackerel . .	14	4,000	290
Saithe	7	1,900	270
Haddock . . .	9	3,300	370
	16	2,300	140
Whiting . . .	7	1,600	230
Cod . . .	5	800	160
	21	2,700	130

The number of body lengths swum before becoming exhausted can be called the endurance of the fish. Thus the endurance of herring is highest; next come small and large sea trout. All white fish have a much lower endurance, one-quarter or less than that of herring. An interesting fact is that small individuals of a particular species have greater endurance than large individuals.